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WE take this opportunity to wish all our readers a very prosperous new year, and also to give a general idea of the work which the Editors of the VETERINARY JOURNAL desire to carry out. We have received numbers of letters from our readers in various parts of the globe congratulating us on the publication and spread of professional knowledge. It is such letters of appreciation of our efforts which lighten our work considerably and enable us to continue our endeavours during the coming year with hope of success. The main policy of the VETERINARY JOURNAL has been to furnish accounts of results of recent scientific research and the practical applications of new discoveries, to give a review of the veterinary work being accomplished at home and abroad, and to record interesting and instructive accounts of clinical cases. In connection with the latter, our thanks are due to those of our readers who have the general welfare of the profession sufficiently at heart to place on record their experiences of success and failure from which we all learn so much. We hope they will continue to assist us in this direction, and that others who have profited by those accounts will return *quid pro quo*, and record their experiences for the benefit of others.

Amongst other letters we have received one in which the writer, while appreciating the general work of the VETERINARY JOURNAL, expresses some little disappointment at the scarcity of general news. We admit the point, but at the same time beg to state that "news" has not been included in the policy of the Journal, except in rare and very important cases. In a monthly

journal "news" is apt to be very stale, since it is usually recorded in the weekly veterinary papers.

However, we shall be very glad to receive suggestions from our readers, and to adopt such as are compatible with the general policy of the Journal.

Editorial.

THE COMING TUBERCULOSIS CONFERENCE.

As previously announced in our columns, an English successor to the Washington Conference is to take place at the Caxton Hall, London, from February 16 to 20 inclusive. The object of the Congress is to arouse all sections of the community to the importance of securing more adequate means for the prevention and treatment of tuberculosis in all its forms. Excellent results appear to have followed the work in this connection in Ireland, stimulated by the Countess of Aberdeen, and it is hoped that much benefit will accrue from a gathering of this kind in London. There appears, however, to be some difference between the Irish method and that suggested for this Conference. In the former case the series of lectures which were given, first in Dublin and then in nearly all the provincial towns of Ireland, were of a purely popular and educational type. The London Conference, it would seem, is to be more technical, and we feel some doubts on this account as to its being as beneficial, because it will principally attract a different class of people. It seems to us that much good would result from a series of popular lectures in the industrial centres, and we understand that some such scheme may be evolved during the Congress. To be successful, however, it must be run on purely philanthropic lines, and we believe that funds would be rapidly forthcoming if a good organizing committee were appointed and representations made to the proper quarters.

With regard to next month's Conference, however, we note that the "Prevention of Tuberculosis" is one of the principal subjects. Now this is a phase which is of very great importance to the veterinary profession, especially as it is maintained and clearly proved that this disease is transmissible from animals to

man. Any effort to control this source must be carried out by veterinary surgeons, and if the veterinary profession wishes to emphasize its position in the matter, now is the time to do it. Veterinary surgeons are invited to attend and take their stand beside their medical *confreres*, to give the benefit of their experience and advice, and to help all they can in this good work. We believe that papers presenting some veterinary aspects of the question are to be presented for discussion by Mr. Lloyd and Professor Woodruff, while the Consultative Committee includes Mr. S. Stockman, Professor Mettam, and other prominent veterinarians. For further details we refer our readers to our advertisement, page xiii.

General Articles.

QUITTOR.[1]

BY GEO. H. WOOLDRIDGE, F.R.C.V.S., PROFESSOR IN THE ROYAL VETERINARY COLLEGE, LONDON.

It is always advisable, when discussing any subject, to start with a definition of that subject, in order to avoid confusion from different interpretations of a word. Adopting that principle, I may state that what I understand by quittor is, "any sinus or fistula of the horse's foot with an opening or with openings on the coronet," or, in other words, "a sinuous wound of a horse's foot." Some authorities confine the term to such sinuses with necrosis of the lateral cartilage as a complication. Hence it is that without a definition some may bear in mind only that more serious form, and advocate stern measures of treatment, while others may think of less serious cases, and condemn drastic measures.

It may be well for us to first revive our knowledge of the anatomy of the region implicated, and without going too deeply into detail. The foot of the horse may be described as consisting of external and internal portions. The external portion consists of the insensitive hoof comprising the wall and bars, periople, sole and frog. The internal portion comprises the pedal bone and lateral cartilages, navicular bone, and coronet bone, ligaments, tendons of the extensor pedis in front and of the flexor pedis perforans behind, the plantar cushion or fibro-fatty frog, the horn-secreting substance and arteries, veins, lymphatics, and nerves. Of these the horn-secreting substance consists of (1) the coronary band, which is joined to the skin and lodged in the cutigeral groove at the upper inner margin of the wall, (2) the keratogenous membrane covering the front of the os pedis and the lower part of the lateral cartilages forming a part of the sensitive laminæ, and (3) the membrane on the lower surface of the os pedis and plantar cushion, which secretes the horny

[1] Read before the Southern Counties Veterinary Society, December, 1908.

sole and frog. The lateral cartilages are one on each side of the foot. Each consists of a plate of fibro-cartilage having four borders, four angles, and two surfaces. It is attached by the inferior border to the wing of the os pedis, and is, therefore, in the region of the quarter and heel, partly within and partly outside the hoof, and extending two-thirds of the way from the heel to the toe. Its upper border is thin and flexile, and may be felt through the skin. The anterior border blends with the antero-lateral ligament of the coffin joint, and has an obliquely downward and backward direction. The posterior margin is parallel to the anterior one, and merges into the plantar cushion. The external surface is convex, and is related to the skin and coronary band, and towards its lower margin carries some sensitive laminæ. It also carries a plexus of veins which pierce it to join a similar plexus on the inner side. The internal surface is concave, and is attached posteriorly to the plantar cushion, while anteriorly it is related closely with a *cul de sac* of the synovial membrane of the coffin joint, and to the antero-lateral ligament of the joint. It is very important to remember this point, and also that this sac is loose when the joint is flexed, and so might easily be punctured with the foot so arranged during an operation, while it is tense if the foot is forcibly extended, and is less likely to be punctured during operation if that precaution be taken.

Causation.—Quittors are produced as the result of some injury to the coronet, which causes the formation of a sinus owing to the production of pus which is unable to escape readily, and which generally burrows, causing an extension of the injury to fresh and more deeply-seated tissues. Ultimately the pressure in the upward direction is sufficient for it to burst at the coronet, and pus escapes. The opening may close, but the pus formation may continue and produce for itself another point of exit in the coronet, and thus the condition may become almost chronic, with several openings discharging more or less purulent material. One fairly common cause is a severe tread when the injury is sufficient to implicate more than the skin. A simple tread is little more than an ordinary wound, but if neglected, and pus is allowed to burrow, a sinus or quittor may be produced. Other common causes are suppurating quarter sandcrack and injuries to the sole, with pus formation and with an insufficient outlet for the pus, such as suppurating corn, pricked foot, and picked-up nail. Still another cause is the almost inexplicable fracture of the wing of the os pedis.

Symptoms.—Usually the first sign of the advent of a quittor is an inflammatory swelling of the coronet, which may be warm, painful, and tense, and usually affecting the quarter or heel. If it is a white foot, the part will also be noticed reddened. Sometimes at this stage lameness is considerable, and the pain may cause a rise of temperature and loss of appetite. Then a softening may occur in the swelling, and it bursts, emitting some blood-stained pus, but the rest of the swelling remains hard and dense. A slough of skin and subcutaneous tissue may be thrown off, and the pain subsides. If no further complication sets in, then the wound may heal up by granulation under simple antiseptic treatment, and the swelling eventually subsides. This form is sometimes spoken of as "cutaneous quittor." In the more serious cases, however, complications occur. The separation of the necrotic tissue is incomplete, and when the surface wound is closed the

remaining necrotic tissue acts as a foreign body, further suppuration takes place, with more burrowing, and eventually it breaks out at the coronet again. As a result of the extension of the necrosis, the lateral cartilage may become affected, and this is the condition in most of the cases of quittor of long standing. This cartilaginous lesion usually commences as a caries at the bottom of the sinus, and then small islets become necrotic and green in colour, and the cartilage itself perforated. In this condition a bit of necrotic cartilage may be thrown off and may be removed, and after closure of the wound it may recur as in the other instance, the only difference being that the probability of recurrence is greater in cartilaginous quittor. The coronary band is affected by the inflammatory phenomena in its immediate neighbourhood, and the secretion of horn becomes irregular, resulting in the production of grooves. From these grooves the duration of a quittor of several months' standing may be estimated, horn being produced at the rate of about ½ in. per month.

The lameness is a variable factor, and is proportionate to the seriousness. Generally speaking, the further forward the quittor, the greater the lameness, and also the more serious; conversely when the quittor is far back to the heel it is usually less serious.

Other possible complications are necrosis of the flexor tendon, necrosis of the antero-lateral ligament of the coffin joint, and implication of the pedal joint by penetration of the synovial sac adjacent to the inner surface of the anterior portion of the cartilage. When this arthritis occurs the pain and lameness become more intense, the horse slings the foot in the air, and refuses to put it to the ground. The temperature rises, appetite is lost, and emaciation rapid. In such cases slaughter is to be recommended, for recovery is almost hopeless. Necrosis of the coronary band may be a complication, and especially in quittor secondary to suppurating sandcrack. When quittor is secondary to suppurating corn or to a pricked foot, pus is often seen first oozing between the hoof and coronet, the swelling and fistula being established later.

Treatment.—If seen in the earliest stages before the swelling has burst, hot medicated footbaths may be employed to reduce the pain and assist maturing of the abscess or detachment of the necrotic skin. When it has burst the opening should be enlarged to give a good exit to the pus, and to prevent premature closure. The extent and direction of the sinus should be ascertained by the cautious use of a blunt probe, and the cavity lightly curetted and thoroughly injected with a suitable astringent or caustic dressing. One of the best for this purpose is the old Villate's solution, introduced by Villate in 1829, which consists of:—

Copper sulphate	1 part
Zinc sulphate	1 „
Goulard's extract (liquor plumbi subacetatis) ...	2 parts
Vinegar	16 „

This solution is both disinfectant and caustic, and it destroys the sluggish or indolent tissue round the cavity, and stimulates the healing process. One great mistake which I believe is commonly made is the too frequent application of potent dressings. If the part is first thoroughly cleaned with a mild disinfectant solution, and then Villate's

solution injected, it should be bandaged with pads of carbolized tow in sublimate wool, and the foot put, if possible, into a leather boot, and not touched for three days, and then the dressing repeated. There are plenty of other solutions which could be used instead of that I have named, as strong solutions of corrosive sublimate, sulphate of zinc, chloride of zinc, sulphate of copper, carbolic acid, and tincture of iodine. Personally, I am fond of using tincture of iodine for injecting, and then practically filling the cavity with powdered boracic acid. In simple cases of sinus recovery may result without much difficulty, and the horse may become quite sound, nothing but a scar remaining, or possibly the formation of a sidebone. Unfortunately, however, in so many cases the injury has extended further, and though the sinus may apparently heal and the horse get nearly sound, lameness recurs more or less suddenly, the coronet again becomes hot and swells, and bursts out at another spot. No doubt we have all had that annoying experience. In such cases it is practically certain that the lateral cartilage is attacked, and that necrosis of a portion has taken place. The necrotic tissue must be removed. This may be done in some cases by means of a curette, the horse being cast, and the same procedure followed as before. Another method adopted for the same purpose is that of "coring" the quittor by means of a caustic. The actual cautery at one time used to be adopted, but that line of treatment is now rarely used, and the potential cautery is more often employed. A little powdered corrosive sublimate or white arsenic is wrapped up with cigarette papers into several little plugs, inserted into the cavity, and bandaged there. This causes a slough all round the cavity, and when this is thrown off eventually the necrotic piece of cartilage may escape also, and the cavity is treated on the previously described lines. If the injured cartilage undergoes resolution all is well, but in my experience of quittor the results are only occasionally satisfactory, and I doubt if one is really justified in adopting this treatment in long-established cases on the off-chance of the case proving to be one of the few satisfactory ones.

When it is certain that the lateral cartilage is attacked with necrosis, I believe the only rational treatment is excision of the cartilage. This line of treatment is very far from new. It was first recommended by Lafosse, sen., in 1754. It is an operation which requires a certain amount of confidence and surgical skill and knowledge of the anatomy of the part; at the same time it is an operation which, I believe, most of you would perform if you witnessed one or two done, and the advantages resulting, since in most cases a horse can be got fit for light work in a month or six weeks after the operation.

When it is decided to operate the foot should be prepared the day before the shoe is removed, if not already off, the hair clipped to the fetlock, loose horn removed, and the foot thoroughly scrubbed and soaked in a hot disinfectant. A pad soaked in a potent disinfectant, as 1 in 1,000 corrosive sublimate or mercuric-potassic-iodide solution, should be bandaged on, a boot applied, and a clean bedding provided. The grooving of the hoof may be done at the same time, but it is not essential. The following day the horse is cast and chloroformed, crosshobbles are applied, and the foot to be operated upon is taken out of the hobbles and fixed by webbing attached above the fetlock. In

the case of a fore foot it should be tied firmly on the top of the uppermost hind-foot, and in the case of a hind-foot to the top of the uppermost fore-foot. Instruments required are hoof knives, scalpel, three sage knives (right, left, and double-edged), dressing and artery forceps, repeller, curette, needles, silk, cotton-wool, and lotion for sponging. The bandage is removed, and the site of operation washed and disinfected. A tourniquet is applied above the fetlock. The hoof is then grooved with a searcher, in order to allow the wall to be removed for an area corresponding above with the extent of the lateral cartilage, and to permit one to completely expose the limits of the lateral cartilage within the hoof. The anterior groove must at its upper extremity be at least two-thirds of the distance from the heel to the toe, and extend downwards parallel to the heel, thus slightly crossing the direction of the horn fibres, reaching almost to but not wounding the sensitive structures. Another groove is made at the heel, and the horn between the two grooves is rasped, but not too thin, or it breaks during stripping. The margin of the sole corresponding is now thinned down till the "quick" can be seen. The projecting edge of the wall at the lower border is grasped with a pincers, the sole is separated from the wall from below by means of a knife, and the wall is forcibly but carefully stripped in the upward direction, parallel with the laminæ, the knife being applied to separate it from the remaining wall where the groove is not quite through; the nearer the coronet the easier the wall strips. When it reaches the coronary band it must be drawn backwards and completely removed. The fringe of hair now revealed round the band must be snipped off with the scissors. A circular incision is then made through the sensitive laminæ, extending at each end to about $\frac{1}{4}$ in. from the exposed limit of the coronary band, and about $\frac{3}{4}$ in. below the coronary band at its midpoint. This isolated portion of sensitive structure is carefully dissected with an ordinary scalpel and forceps from the pedal bone and lateral cartilage. The dissection is continued under the coronary band with a sage knife convexity outwards, and this structure, together with the skin above it, is carefully separated over the entire extent of the lateral cartilage forward and backward. This dissection can be facilitated by the flap being raised either with a repeller or a tape passed through the fistulous opening. At this stage islets of green necrotic cartilage may be seen, either loose or attached. Many operators very jealously guard against any cutting of the coronary band for fear of the production of false quarter afterwards. However, I usually continue the incision of the sensitive laminæ up through the coronary band, and about 1 in. of skin. The dissection is then more easily carried out, and the next step is very greatly facilitated. I prefer to risk false quarters and diminish the danger of puncturing the synovial sac of the pedal joint. The next step consists of the extirpation of the cartilage itself. This is best done by first cutting the cartilage into two unequal parts at about the junction of its anterior and middle thirds. The posterior portion is now separated from the underlying connective tissue with a sage knife with concavity towards the cartilage. Then bring the knife out below at the junction of the cartilage and pedal bone. Thus the posterior portion is removed with one or two cuts. The anterior portion requires a little more caution on account of the danger of cutting the lateral ligament or the

synovial membrane. The foot must be forcibly extended to tighten the latter, and the cartilage cut out carefully. This is best done with an ordinary scalpel, with the cutting edge directed towards the cartilage, or by careful slicing. Any cartilage still left attached to the os pedis or to the flap, and all unhealthy-looking tissue must be removed, or it may become necrotic later, and cause more trouble.

If the coronary band is intact, it is very difficult to get the knife behind the cartilage, and the danger of doing injury to the ligaments is increased. If the articular capsule should be punctured it is a serious matter certainly, but not so serious as used to be thought if proper antiseptic precautions are maintained.

It is stated by some operators that if the necrosis is limited to the posterior portion of the cartilage it is unnecessary to remove the anterior portion. I acted upon that principle in the last case I operated upon, and when I was just about to discharge the horse as cured, I observed a small fresh swelling and an escape of pus. Consequently, I again cast the horse and separated the flap, and found the trouble to be due to necrosis of a bit of the previously healthy cartilage in front. I then removed the whole of the remaining cartilage, and in future I shall unhesitatingly remove the whole cartilage, regardless of the area affected. If there is ossification of the cartilage it may be removed with a saw or bone forceps, if thought necessary. The cartilage out, the opening or openings through the skin must be scraped and cleaned, and the whole area washed with an antiseptic, 2½ per cent. carbolic acid solution. The flap is then turned down again, and the skin sutured. In Bayer's operation the sensitive laminæ are also sutured. I prefer not to suture below the coronary band, so that the cavity may be irrigated afterwards, if necessary. Suturing would, no doubt, be advisable if one could reasonably hope for healing by first intention, but that is scarcely to be expected when there is so much injury to tissues. When the flap is replaced, I saturate the part with tincture of iodine, thickly cover it with boric acid powder, and bandage as tightly as possible with antiseptic compresses of wool or tow. The chloroform muzzle and tourniquet are now removed, and the horse allowed to rise when fit. Before removing the hobbles, I turn the horse over, as by so doing I find they rise more quickly after chloroform. The horse is put into a stall in slings, in order to diminish weight on the foot, and a boot applied. Next day the bandage and compress, which are soaked with blood, are removed, and replaced by fresh, sterilized and antisepticized dressings. These are left on for three or four days, unless the horse shows pain or uneasiness, and then the dressings are again renewed. If there is now no pus or moisture oozing from the flap, these dressings may be left on for four or five days. If there is any oozing, the flap may be gently raised and irrigated with 2½ per cent. carbolic solution, or equal parts of tincture of iodine and water, daily. Contrary to what one might expect, the horse rarely shows any increase of lameness as the immediate result of the operation, and if he was very lame before operation, he will be much better in a week. In about three weeks the wounds should be nearly healed, the sensitive laminæ well covered with a thin pellicle of horn, and the horse walking almost free from lameness. Under favourable circumstances, within five or six weeks after operation the horse may be put to slow light work, the foot being protected by a light bar-shoe and a bandage soaked in Stockholm tar until the wall has grown down.

Although a large portion of this paper is devoted to the excision of the lateral cartilage, I do not wish you to gather that I recommend this operation in all and sundry cases of quittor or sinus of the foot; but I certainly do recommend it strongly in those cases which have taken on a chronic character, and in which the lateral cartilage is undoubtedly necrotic. There is no one royal method of treatment beyond removal of necrotic tissue, if it exists, and each case must be treated on its own merits.

THE DISEASES OF THE GENERATIVE SYSTEM AND THOSE INCIDENTAL TO PREGNANCY AND PARTURITION IN THE BITCH.

BY HENRY GRAY, M.R.C.V.S., KENSINGTON, W.

Diseases of the Vulva.

The diseases of the vulva are few, and rarely of a serious nature. We may, however, find a congenital malformation, in which there is no opening, with the exception, perhaps, of a minute orifice, resembling, on close examination in a good light, a pin-prick, and through which the urine passes in a very fine jet. This anomaly may, if deemed advisable, be remedied by a surgical operation. There is also sometimes encountered an inflammation or ulceration of the mucous membrane inside the lips, or an abscess in their thickness, or an eruption on the cutaneous surface. In old bitches the organ may be the seat of enlargements, such as hypertrophy of the clitoris; hernial distensions, cysts, and new growths, simple, contagious, or malignant.

Very frequently one is consulted about the narrowness of the vulval opening commonly seen in young bitches who have not bred before, and on examination of such cases one finds that the walls of the vulva feel hard, rigid and contracted, and will not enable one to pass one's well-oiled little finger. No alarm need be feared, as it is only a natural contraction, which will generally pass away as soon as the bitch is well advanced in normal "heat."

Diseases of the Vagina.

The diseases of the vagina are more numerous and more important than those of the vulva. The more important are:—

(1) *Constriction*, which may either be congenital or arise from some other disease. The acquired constriction generally arises from destruction of the mucous membrane in the removal of diseased tissues found in the contagious granulomatous growth, so commonly encountered in the different varieties of the bull-bitch, in the removal of tumours, and of the protruded parts of prolapsus of the vagina, or after infected lacerations arising from difficult parturition.

(2) *Congenital Recto-vaginal Fistula*, where the rectum empties itself direct into the vagina.

(3) *Prolapse or falling down of the Vagina.* The whole or only a part of the vaginal membrane may take part in this eversion. It may occur after a difficult pupping, or where this act has been easily accomplished without any assistance. In this latter case it is due to an inherent weakness of the part. It is, however, usually seen during "heat," and then very liable to recur at each successive "heat."

If the organ is replaced as soon as it is discovered down, it may retain its normal position without any further trouble; but should it be exposed to the action of the air and of dirt, it is liable to become dry, irritable, abraded or congested, and it will, after being cleansed with salad oil and a piece of lint, have to be maintained by sutures passed through the lips of the vulva and then tied together. Instead of sutures, clamps specially made for this purpose may be substituted. If there should be much straining, irrigating the vagina with ice-cold water, or the local application of cocaine ointment, will allay it. To quiet the nervous system a hypodermic injection of morphine (2 to 6 grains), or a dose of chloral (1 to 2 drachms), or repeated doses of bromide of potassium (5 to 20 grains), may be necessary. Should this method not be successful after a few days' trial, it may be advisable to suture the upper (posterior) wall of the vagina to the perinæum, immediately below the anus. This has generally the desired effect of retaining the organ in its proper position. On no account should the protruding organ, unless gangrenous, be cut off as if it were a foreign body. You cannot have it replaced once it has been removed, when it is followed by a constriction of the canal which prevents a successful pupping, even if it does not prevent a successful conception.

I have on several occasions opened the abdomen, drawn the uterus forward, and in consequence replaced the vagina in its normal position, and then maintained it there by suturing the uterus to the abdominal wall. This has answered the purpose in a good many instances, but in others failed. Where I have failed after fixing the uterus to the abdominal wall I have been successful after adopting the method of suturing the prolapsed membrane to the perinæum.

(4) Inflammation, ulceration and catarrh of the vagina resulting from chills, abuse of irrigations, improper use of instruments or drugs, difficult parturition, &c., should be treated by mild soothing antiseptic preparations applied topically.

(5) The new-growths such as polypi, cysts, cancer, fibrous and fatty tumours, &c., are treated on the general principles of surgical practice.

(6) The contagious venereal granuloma.

Infective Venereal Granuloma.

This has been variously termed a vaginal warty growth, cancer, infective sarcoma, lymphosarcoma, myxosarcoma, and lastly granuloma. It is truly a contagious disease almost confined to the various varieties of the bull-dog, but it may, however, be seen occasionally in the pug, and rarely in other varieties of the canine race. It is a very old disease, but has not attracted much attention until the last thirty years, when in 1877, Nowinsky, a Russian scientist, made known his researches on its transference by inoculation into the vagina and under the skin. In 1888-9, Wehr also studied the disease. Since then numerous other investigators, including Duplay and Cazin, Geissler, Bellingham Smith and Washbourne, Powell White, Sanfelice, Sticker, and Bashford, Murray and Cramer, have given much attention to it.

S. P. Beebe and James Ewing, of the Huntingdon fund for Cancer Research, and the Department of Pathology, Cornell University Medical College, found a spirochæte in one case, but failed in seven other clinical cases. Still more recently (1907) Professor Mettam, of

the Royal Veterinary College, Dublin, found a similar organism in a tumour excised by Professor Wooldridge, the specificity of which awaits confirmation.

The causal organism has yet to be found and demonstrated. All we know about the causation is the disease is conveyed by coitus and by inoculation. In human syphilis a spirochæte has been demonstrated as the cause, for which Metchnikoff is endeavouring to find a trustworthy combative serum. The disease has been seen extensively in England, Germany, Russia, France, and the United States of America. It attacks both sexes, especially the young and mature adult. It is equally encountered in the British and Miniature as in the French bull-dog.

Though it is essentially a venereal disease, it may arise independently on other parts of the body without the generative organs becoming affected. It is commonly seen on the skin of the neck, throat, back, groin, abdomen, limbs, and between the digits. It is also encountered as nodular growths in the abdominal lymphatic glands, mesenteric glands, spleen, liver, kidney and lung.

In the genital organs of the bitch it usually begins as a small lumpy or warty growth on the mucous membrane of the vagina, and this may after a time increase in size and number, the multiple growths running into one another and forming a large pinkish or purplish cauliflower-like excrescence, which bleeds when touched or discharges a bloody muco-purulent material that escapes from the vulva, which is, in advanced cases, generally swollen. The most usual seat of the growth is near the urethral opening. It may also be found at times in the vulval passage. Occasionally it may extend from the vulval passage towards the uterus, completely filling the vagina, protruding from the vulva and causing the perineal region to bulge.

In the male the nodular or warty growths, often having a long pedicle, are found on the penis and sheath, from which they may extend to other parts. The tumours seem to grow with greater rapidity on old animals than they do on young dogs, and when they are in poor condition than in a healthy state. They may ulcerate or slough out, and where this takes place the part contracts and a scar or cicatrix remains, and the disease may in consequence spontaneously disappear. When one tumour commences to retrogress they all do. When the disease is present it is possible in a great number of cases for conception to take place, and to be followed by a normal parturition.

The appearance of the new growth is not preceded by any noticeable discharge, catarrhal or sanious. A mere rubbing of a portion of the infecting tumour on the abraded mucous membrane is sufficient for a successful inoculation. Where the disease has not spread to inaccessible regions there is a possibility of a permanent cure, even without serious mutilation. I have come across many cases that were absolutely cured without any recurrence during the remainder of the animal's life, although in the majority of instances the interval between recovery and death had extended over several years, and during that period the bitches have generally given birth to numerous progenies, which mostly have, in their turn, become parents, grandparents, &c. I know of such cases where the preliminary operation of ovariotomy or ovarohysterectomy was advised, but fortunately for the owner of the animal, not acceded to; and there is no practical reason why the

operation of sterilization should be performed, and thus render a possibly curable case a valueless one from a breeder's point of view. Such an operation does not cure the disease, which is a contagious one that can be prevented by simple hygienic measures, such as washing out in the male the sheath and its contents with a weak solution of copper sulphate (1 in 1,000 to 1 in 100) after the dog has served a strange bitch. This should be made the strict rule with regard to valuable bull-dogs at stud.

When the disease is limited to the vagina or external genital organs it may be permanently eradicated by scraping away the diseased tissue by means of a Volkmann's curette, and applying solid copper sulphate to the resulting raw surface, which may after some days be painted with tincture of iodine or liquor arsenicalis. The internal administration of arsenical compounds seems beneficial. This treatment should be carried out thoroughly and patiently until the wound has healed up without having any trace of the disease. The animal should be examined from time to time to see if there are any signs of a recurrence, when the same treatment should be again adopted.

Copper sulphate has been used from time immemorial in the treatment of venereal sores and growths, and after twenty-five years' experience of its use I still find it to be the best antiseptic or astringent for the genital passages. The salt in its solid state seems to have a predilection for lowly-organized tissue, which it shrivels up without exerting any high degree of destructive action on the surrounding healthy tissue as some other caustics do. It is preferable to zinc chloride, iron perchloride, or silver nitrate.

Diseases of the Uterus.

The uterus or womb of the bitch is affected by disease more than all the other sections of the generative system put together. This is not to be wondered at when we consider that the greater part of the generative function is carried out by this organ.

Chronic, Catarrhal or Senile Endo-metritis.

This is a catarrhal condition of the mucous membrane of the uterus. It is liable to take a chronic and persistent course. The inflammatory process may after a time extend to the deeper layers of the walls of the uterus, which thereby become thickened, corrugated or rugose, and, rarely, give rise to wart-like growths in its interior. There is always a collection of sero-purulent, muco-purulent, or sanious muco-purulent material within the lumen of both horns of the viscus.

It is a very common disease in the bitch, and usually arises from a suppression of the "heat," induced by a chill set up by exposure, getting wet, being thrown into water, or washed on a chilly day. Though it is seen in bitches of all ages, it occurs oftener in aged ones that have not borne any or many litters. I have seen it in mother and daughter at the same time, although they were parted by a distance of 100 miles, and had not seen one another since weaning, which had taken place years before. I have also encountered it in two bitches in the same house at the same time. It may recur at the next or a subsequent "heat." The bitch is generally restless; she seems to be feverish or peevish, and drinks rather more water than usual, which

may be rejected almost immediately it has been swallowed; the appetite is diminished or suppressed; the bowels are confined; the breathing is short and quick, but rather shallow, and may be accompanied by a slight moaning; the lateral borders of the abdomen become distended, which gives this region a semi-pendulous appearance. After these symptoms have been in existence some days there is suddenly noticed issuing from the vulva a discharge of dirty sanious or yellowish material, which the creature licks up with avidity. When this discharge sets in the general symptoms abate, and the appetite improves. This discharge may continue some time, and in young bitches, under appropriate treatment, it may eventually disappear. But in a very large number of instances, especially in very aged bitches, in spite of irrigations with mild antiseptic or astringent lotions and appropriate internal treatment, the discharge continues, or is pent up for a time, emaciation sets in, and progresses until the creature is destroyed or dies from exhaustion. At times, and especially when the discharge seems checked, but is accumulating within the horns of the uterus, symptoms of gastritis set in, and carry off the animal from an acute congestive gastritis. In some bitches very few or no symptoms are observed by the owner until the discharge is suddenly noticed.

I have observed in a few instances where an animal suffering from this complaint has rapidly become dazed, and has had repeated vomiting, followed by collapse and death. These grave symptoms arise from perforation of both cornua and percolation of the uterine contents into the peritoneal cavity, thereby setting up acute peritonitis and toxæmia. Where the perforation is, a necrotic patch the size of a shilling to a florin, affecting the whole thickness of the uterine wall, has been encountered. The position of these dead patches is symmetrical in the respective horns of the uterus.

As the majority of the cases occur in aged animals often past the safe age for breeding, I believe, after a long experience, the most advisable treatment is the complete removal of the whole uterus, including the ovaries. It is the most economical and also the surest method of removing the complaint. If this should be adopted the acute symptoms should be allowed to abate before the operation is performed. But in young and valuable brood bitches milder means must be patiently adopted. Yet it is no use merely injecting material into the vagina; it must reach the interior of the uterine horns, and this can only be done by passing a *double-channelled uterine catheter* through the *os uteri externum* into first one horn and then into the other, and injecting some mild warm antiseptic or astringent fluid, taking care no air is also admitted in the process. This is frequently a difficult matter to carry out in the non-puerperal animal in consequence of the narrowness of the calibre of the external uterine opening. As mentioned above, a double-channelled catheter should be used so as to prevent overdistension of the uterine horns, and, in consequence, their possible rupture.

Uterine tonics and stimulants, such as iron, aloes, hydrastics, ergotinine, strychnine, eserine, &c., should be administered so as to improve the tone of the organ, or to bring about its contraction with a view of ridding it of its contents. When the external opening of the uterus is constricted by spasmodic action, and the catarrhal contents cannot escape, warm rectal or vaginal injections

and warm baths should be tried to bring about its relaxation. Or atropine or belladonna may be painted on the vagina around the external uterine opening.

Puerperal Septicæmia, Septic Metritis, Endometritis, or Metro-peritonitis.

This is a disease that occurs during the puerperal state, and may be due to infection derived from another case of a recent or remote date. It may also be seen as a result of dead and retained fœtuses; injuries caused in the removal of living or dead pups: unskilful use of instruments or drugs; injudicious use of injections; retention of a placenta; *undue and hasty interference;* and finally, where *no assistance* has been given in an easy and otherwise normal parturition. Infection may occur during the act of parturition, or follow on this when accomplished.

The bitch is dull, refuses food, but prefers water, which she may drink with avidity, yet rejects it almost immediately; the coat is dull and open, the body feels cold, and the animal is disinclined to move. The milk is suppressed, and the glands feel flaccid and cold. The young pups cry, feel cold, are thin, and have a dull open coat; after a time they cease crying, become limp, and then die.

There is at first an elevation of temperature, which may reach from 103° F. to 106° F., to drop when the system is in a state of collapse to 100° F. and even 96° F. (The normal rectal temperature of a dog ranges from 100·5° F. to 102·5° F., the average being about 101·5° F.) There is a rapid wasting of the body; the eyes become dull, glazed, sunken, or meaningless in expression. There is a dirty sanious or blackish fœtid discharge from the vulva, especially if the bitch strains, as she often does, as if to urinate. On examination of the womb, or even vagina, by a well-vaselined index finger, it feels hot, swollen and rough, and the discharge on its surface gives the finger a thin, irritating and constringing sensation. On manipulating the organ through the abdominal walls it gives to the hand a swollen sensation. Pain is evinced by either methods of examination. The uterine wall may become perforated in identically the same manner as mentioned in the description of the previous disease. Death may take place within twelve to twenty-four hours after infection has taken place either from an accidental wound or from absorption of the toxic putrefactive material. It may, however, be delayed two or three days. If the animal survive the fourth day it may, in the majority of instances, recover.

The greenish discharge that takes place after a normal parturition, and the reddish lochial material issuing from the vulva a few days after the act has been accomplished, are natural, and should not be mistaken for that of septic metritis. Nor should they be interfered with by the use of injections.

The infection should be prevented by cleanliness and disinfection. No assistance should be given unless the hands or instruments have been thoroughly washed and disinfected. When a decomposed pup, or a pup that has been broken, has been removed, the vaginal and perhaps a portion of the uterine canal should be syringed out with a warm solution of boracic acid (1 in 100), permanganate of potassium (1 in 500), peroxide of hydrogen (1 in 100), biniodide of mercury (1 in

10,000), or sanitas. This should be done well once, and not repeated unless urgent symptoms indicate its repetition. I shall refer again to uterine irrigations when I treat upon "protracted labour." The symptoms must be treated and the strength of the animal maintained by tonics and stimulants. Mustard poultices to the abdomen may be tried. The disease is, however, a very fatal one in the bitch.

Abortion.

Compared with the other domesticated animals, the bitch suffers the least from abortion. When a bitch parts with her pups before the eighth week of utero-gestation the process is termed abortion. If, however, the pups are delivered after the eighth and before the end of the ninth week, we say they are prematurely born, and that it is possible for them to survive; whereas when they are born before the eighth week they are delivered dead, or die soon after. As in the guinea-pig and cat, the bitch may go from sixty to sixty-six days, and occasionally a few days under or over these extremes. My experience is the old bitch is more liable to have a shorter period of utero-gestation than the young animal. A certain bitch has been said to go eleven weeks and then give birth to living pups. But the accuracy or completeness of the facts on which this statement was based should be doubted.

Abortion may be seen in the bitch when she is suffering from general disturbance, such as tuberculosis affecting the generative organs, septicæmia, or distemper, or from some disease of the generative system, or from some drastic drugs. There is a form of abortion, often, but erroneously, termed "phantom pregnancy," in the bitch in which, about the sixth or seventh week, the abdomen becomes enormously distended, and the milk glands and teats enlarged. About the eighth week these phenomena suddenly disappear, the parts regaining their normal size and appearance. In the majority of such instances no other disturbance has been noticed. But in a few cases there has been observed a greenish discharge issuing from the vagina; yet on vaginal and external examination of the uterus no fœtus has been discovered. This is an important matter, especially where a bitch is let out on breeding terms, and the lessee informs the lessor that between the sixth and seventh weeks the bitch is heavy in pup, and at the end of the ninth week he, the former, again writes to the latter and tells him the bitch has "missed." You may guess what the latter, if he has had no experience of such matters, thinks of the former—a swindler.

Fœtal Septicæmia.

In a few instances I have observed an epizootic in which nearly if not quite all the bitches of a kennel have had dead pups, which have mostly brought about the death of the dam, the latter showing very little, if any, effort on her part to get rid of them.

Uterine Inertia.

This is a very serious disease of the bitch, in which the uterus makes very little or no effort to free itself of its contents. I believe the chief cause to be a chill, especially in those bitches that do not get a sufficient amount of exercise, have a delicate constitution, and are fed

improperly. In consequence of loss of power in the uterine walls, the pup or pups die, and if not removed by natural or artificial means, the dam usually succumbs to septicæmia. To combat this trouble, pregnant bitches should be regularly exercised and well fed on a fleshy diet, so that the tone of the whole muscular system, including the uterine and heart muscles as well as the systemic ones, is thereby increased. I shall again refer to this matter when treating upon "protracted labour."

Torsion of the Uterus.

This occasionally occurs in the pregnant bitch, and if it is not recognized early, not only are the pups sacrificed, but also the dam. In the majority of cases only one horn of the uterus takes a half turn round its fellow, and thus not only impedes the outlet of the pups, but diminishes or paralyzes the contractive and expulsive power of the uterus. On rare occasions both horns are, for a short distance, twisted round one another like two pieces of cord twisted upon themselves. Death in such a case takes place from strangulation and septicæmia.

It is possible to reduce the torsion without opening the abdomen, but, as a rule, this disorder is not recognized until the animal has gone too far or a *post-mortem* examination is made. In advanced cases I have noticed a tympanitic-like distension, and on opening the abdomen the uterus has appeared as a voluminous and distended purplish organ. In recent ones, where the twist has only taken a half turn, the colour of the organ is normal in appearance.

Extra-uterine Fœtation.

In this the development of the fœtus takes place outside the uterus, in consequence of the ovum becoming impregnated by spermatozoa in the Fallopian tube, which after a time bursts and allows the fœtus to engraft itself upon the peritoneum, where it may die, and afterwards become encysted and ultimately absorbed. It sometimes gives rise to hæmorrhage, and then may endanger the life of the bitch. If the condition is recognized during life, it should be removed by laparotomy (opening the abdominal cavity).

Falling Down or Inversion of the Uterus.

This sometimes takes place in the bitch after a difficult parturition, or where too much force has been used in extracting a pup. It may, however, arise from some inherent weakness, and, in this case, follow on an easy labour.

The everted uterus should be cleansed of all extraneous material, then well anointed with olive oil and replaced in its natural position, and, if necessary, maintained there by means of a pessary or a vaginal plug kept in position by sutures through the vulva or a bandage. If these means are not followed by success, it may be advisable to open the abdomen and fix the uterus to its walls. To prevent straining, sedatives should be given.

Malpresentation of the Pup.

The principal malpresentations of the pup inducing difficult or protracted labour are:—

(1) The head is turned back towards the side of the shoulder.

(2) The head is turned in a backward direction towards the back.

(3) The head is turned downwards and inwards towards the breast, the top of the head or even the nape being presented.

(4) The back is presented, all the limbs and the head being directed towards the interior of the uterus; this presentation may be in a vertical or a transverse direction.

(5) The head is presented, but one or both forelegs are turned backwards.

(6) The tail and hind quarters are presented, but one or both hind legs are directed towards the uterus.

(7) One part of one fœtus and a part of another may be presented at the same time.

There are many modifications of these abnormal presentations, but the above give one a fair idea of what one is likely to encounter. It is true that in many cases a malpresented pup is spontaneously delivered without any assistance. It should be borne in mind that the majority give rise to a lot of trouble to the inexperienced; but if they are recognized and then rectified, it is surprising how easily the pup is delivered, although perhaps before this one had been struggling for hours to relieve the bitch without obtaining any success.

The abnormal position of the fœtus may be remedied by passing the index finger of one hand up the vagina and fixing or repelling the fœtus; at the same time the other hand is manipulating it through the abdominal walls, so as to put it into as natural a position as is possible. It may be necessary for an assistant to fix and maintain the fœtus by grasping it through the abdominal walls and holding it to the entrance of the pelvis, so as to enable the operator to grasp it and replace in a suitable position for its extraction. If the intra-abdominal pressure is too great to allow external manipulation, it can be overcome by chloroforming the animal, when the abdominal walls collapse, enabling manipulation to be easily carried out. Force should never be used when art would overcome the difficulty. Hundreds of bitches are lost every year by adopting the former, when the latter would have saved the majority. There are no special forceps that will do what lack of skill fails to accomplish.

Protracted Labour.

Many bitches have a difficulty of delivering themselves of their pups. This difficulty may be due to a variety of causes, such as narrowness of the pelvis of the dam, the large size of the fœtus, malpresentation, tumours, &c., but in the immense majority of cases these factors do not come into play. I believe, then, it is immediately due to weakness of the whole of the muscular system of the bitch. A chill often assists this weakness.

I feel quite convinced—from a life-long experience not only with horses, cattle, sheep and pigs, but also dogs, cats and birds—that protracted labour not arising from physical impediment can be prevented. We only see it in animals confined, never when at full liberty. It stands to reason that that which raises the whole tone of the muscular system enables the uterus, which is a muscular organ and a part of the whole, to fulfil its function of contraction and expulsion necessary to rid itself of its burden. Very often a

thin, weak, fatty or flabby heart is at the bottom of the mischief. But as it is not always possible to avoid the unnatural conditions under which our breeding animals are kept, we must be prepared to adopt artificial means to compensate them for the evils arising from domestication. In the case of protracted labour due to weakened throes of the uterus, we should stimulate these throes into a greater state of activity by administering such drugs as ergot, strychnine, eserine and digitalis, If these fail to have the desired effect after a reasonable lapse of time, traction applied to the fœtus should be used—that is, if the fœtus be within reach—and thus bring about its expulsion.

This traction is applied by means of various kinds of forceps, nooses or loops, and hooks or crochets. Every operator has his fanciful pattern, which may be useful in his hands, and worthless in those of another. Much money and labour are often wasted over these things, when simple appliances are often more reliable, and, in consequence, more valuable. The instruments (my special forceps are made by Messrs. Allen and Hanburys, Limited, 48, Wigmore Street, W.) I use are most primitive; the more up-to-date ones I keep merely as museum specimens.

Blaine, Youatt, Mayhew, Hunting, Sewell, and a very great number of practitioners, including myself, were and are very fond of using as a crochet a long button-hook, which can be bought for one penny or three halfpence.

Of course, any or all instruments are worthless, and may be very dangerous, unless used with great skill, born of experience. They are to the accoucheur, especially the canine one, what brushes are to the artist: they require to be used with brains.

By whatever means traction is performed it must be used steadily, continuously, and patiently. I have had success after four hours traction on one pup. It should never be adopted until the pup is iu the normal position, which may be nose and two fore-feet, or two hind-feet and tail first, all other positions being abnormal. By using too strong and too spasmodic a traction the fœtus is likely to be torn or broken, an accident to be avoided especially within the uterus.

The interior of the vagina, and as far as possible of the uterus, should be well lubricated by neutral vaseline, or, what is a much better lubricant, pure lard. This should be freely and repeatedly applied, especially if by chance the pup gets broken, when it not only acts as a lubricant, but it also prevents a possible infection by acting as a mechanical bacterifuge, and as a protective to the mucous membrane.

Should the fœtus be removed in its entirety, and not broken or putrid, and if there is no wound on the vaginal membrane, irrigation of the uterus should be avoided, as it is not necessary, but liable to reduce the natural defensive power of the uterine walls. Yet, on the contrary, if the fœtus be broken or putrid, I believe irrigation is a lesser evil than dead or decaying material or irritating fluid exuding from the broken or putrid fœtus being left behind in the uterus, especially if there also should be an artificial wound caused by a bone protruding from the fœtus.

When irrigation is adopted, it should be done well once and not

repeated, as is often the case. The best materials are boiled water; potassium permanganate (1 in 1,000 or 500); peroxide of hydrogen (1 in 100); chinosol (1 in 1,000); and biniodide of mercury (1 in 10,000 or 5,000). Sanitas, which contains a quantity of peroxide of hydrogen, and iodine, are favourite agents with many. On no account should air be introduced with the fluid. The superfluous fluid should be allowed to drain away from the uterus, else, if retained too long, it is liable to become absorbed, and set up intoxication. It can be encouraged to flow away (1) by allowing the animal to run about, when she usually strains and thus gets rid of the liquid; or (2) by standing her on her hind limbs, holding the fore ones up, and then gently manipulating the abdomen.

A subcutaneous injection of ergotinine citrate ($\frac{1}{25}$ grain) will assist the uterine walls to contract, and thus empty the viscus.

When a bitch becomes exhausted by a protracted labour she requires to be gently stimulated. This can be done by the use of the ammoniated tincture of ergot ($\frac{1}{2}$ to 1 drachm), tincture of digitalis (5 to 20 ♏), caffein (5 to 10 grains), or strychnine ($\frac{1}{100}$ grain); or the two latter and the alkaloidal extracts of the two former may be given hypodermically. Another method of sustaining the strength of the animal is a transfusion by gravitation under the skin of a normal saline solution composed of 49 grains of table salt and 16 ounces of boiled water. These ingredients are in the proportion of 7 in 1,000.

The sequels of protracted labour are death from exhaustion, septicæmia, thrombosis, septic metritis, peritonitis, gangrenous ulceration with perforation, &c. They cannot always be avoided, and may arise even when no assistance has been given in an easy and normal delivery.

Eclampsia, or Convulsions of Suckling Bitches.

This is a form of epileptiform convulsions seen in bitches that have too many puppies to suckle. It is usually seen when the pups are from one to three weeks old, when they are generally very plump and strong. It may, however, occur before the pups are born, or when a few days old, or late as the sixth or seventh week after delivery or after weaning. It has also been seen when the bitch has been deprived of her pups. It has been attributed to a chill, to fear or worry, or to suppression of the milk. I believe it is an auto-intoxication. The urine of the affected bitch is endowed with toxic properties.

The spasms, as a rule, come on suddenly. The animal has a restless or an anxious expression; the breathing becomes rapid, short, and shallow; the mucous membranes are of a dirty purplish colour; there is a staggering gait, and the animal falls down and makes a few struggles, and then lies on her side with the legs extending from the body at right angles. The animal, if touched when in this position, gives a few snatchy jerks with the jaws and limbs, as in strychnine poisoning.

The convulsions differ from those of epilepsy. In the former consciousness is generally retained, whereas in the latter it is abolished during the attack. They somewhat resemble those of strychnine poisoning, but are not so rigid as in the latter case.

It is said that these cases sometimes end fatally, but in my experi-

ence I have never encountered a death from this malady. The best treatment to adopt is to give a dose of chloral (1 to 2 drachms) to allay the convulsions, and afterwards a brisk aperient, such as jalap, to clear out the alimentary canal and thus relieve the system by removing some of the poison. If the convulsions are very acute, it may be deemed advisable to administer chloroform by inhalation. By all means remove the pups to a foster parent, or if they are old enough they should be weaned.

Diseases of the Milk Glands.

A curious anomaly in the bitch is that the milk glands often secrete milk about the time she should have pups if she had conceived. It may occur about nine or ten weeks after the first or subsequent "heats." If the bitch is not allowed to have pups, the glands, as old age advances, become chronically inflamed, enlarged and hardened, and often the seat of simple or malignant new growths.

Congestion of the mammary glands arises when the pups are destroyed or die soon after birth. The glands are swollen, hot and doughy, when manipulated, Non-stimulating food, as milk, should be given. The secretion of milk should be checked by the application of belladonna to the glands, which should have every now and again a little milk withdrawn from them. An active aperient is advisable to act as a derivative, which relieves the glands.

Inflammation of the glands is often an advanced stage of congestion. They become hard, hot and painful. The animal is feverish and restless, the appetite is diminished, and there is a moderate degree of wasting of the body. The treatment is similar to that for congestion.

Suppuration of the glands, which is seen in the form of an abscess, may be an advanced stage of inflammation, or it may arise from infection, when the animal often succumbs. It gives rise to loss of appetite, great thirst, emaciation, and great dulness or depression. The rectal temperature may go several degrees above the normal.

As soon as an abscess is found in one or more glands to be pointing, it should be opened, and the part or parts repeatedly fomented with hot boracic solutions.

Suppression of the milk supply may be due to fright, worry, fits, septicæmia, metritis, and many diseases of various organs. When due to fear or excitement, the flow should be encouraged by giving warm soup containing onions, oatmeal, and tripe, and a few drops of the oil or spirit of aniseed.

Sterility in the Bitch.

The absence of power on the part of the bitch to reproduce her species is not only common, but also important, especially from a breeder's point of view. Yet not every case of "missing" is the fault of the bitch; it is very often the fault of a particular dog, who may be an uncertain stock-getter in consequence of being used too frequently, or having a diminished power of developing mature or a sufficiency of spermatozoa. This latter is frequently seen where the male has one or both testicles in the inguinal region or groin instead of in the scrotum.

The principal causes of permanent sterility in the female are the imperfect development of one or other segments of the generative system, including the ovaries, oviducts, uterine horns, vagina and vulva; chronic catarrh of the uterus or vagina or Fallopian tubes;

cystic degeneration of the ovaries; atrophy or malignant disease of the ovaries; infective venereal granuloma extending into the uterus; stricture of the vagina; simple or malignant growths; chronic prolapse of the vagina or uterine horns, &c. The absence of ovaries and uterus, or a portion of the vagina, resulting from their removal, should not be overlooked as another cause. Fat animals are more subject to it than lean ones. Probably in them sterility is the cause of the obesity.

Prolonged abstinence from sexual intercourse frequently does away with the desire for the opposite sex. Very often a temporary sterility arises from a faulty secretion of the uterine and vaginal mucous membrane, brought about by some previous general malady, or a previous abnormal pregnancy or difficult parturition. It has in some instances been ascribed to a temporary spasmodic contraction of the vagina. It is often due to improper or insufficient food, bad hygienic surroundings, and lack of exercise.

The temporary form of sterility may be removed by improving the tone of the system, and by irrigating the genital passages with a warm mild antiseptic fluid, and after a few days' interval by a warm soapy one. Uterine tonics, as aloes and iron, should be administered. A free supply of raw meat, or even dirty paunches, is advisable. And last, but not least, the bitch should have as much free exercise in the open as is possible.

Nymphomania.

An abnormal desire for the male is occasionally seen in the bitch, but is usually associated with some disease of the genital organs, such as a chronic vaginal catarrh, ovarian or uterine tuberculosis, a cystic condition of the ovaries, &c. If the cause of the trouble cannot be ascertained and remedied, removal of the ovaries together with the entire uterus is an absolute cure of this vicious habit.

It may be worth while to mention that in the healthy bitch this is not a serious operation. During nearly the last quarter of a centnry I have removed the entire uterus with the ovaries from many non-pregnant as well as pregnant bitches, before the period of utero-gestation was up, without having had a single death, and without ever witnessing any further desire for the opposite sex. I am of opinion that those operators who have encountered cases where the sexual desire has returned after ovariotomy did not remove the entire uterus with the ovaries—in other words, the operation was incompletely carried out. It is an old operation in canine surgery, and is no more dangerous when performed on the bitch than on the sow-pig. Our forefathers regularly hunted with packs composed of spayed bitches that had been operated upon by the ordinary horse doctors or castrators, who were commonly termed, in those days, farriers, who had never received a day's training inside a veterinary school, and who lived before the days of anæsthesia and antisepsis, and yet the animals survived the ordeal. Peritonitis after an operation skilfully performed inside the peritoneal cavity is not to be dreaded in a healthy bitch any more than it is in a sow-pig.

The Doses of the Principal Preparations of Ergot used in Protracted Labour.

These drugs must not be used where there is malpresentation of the fœtus, mechanical obstruction, as tumours, torsions, prolapses, &c.

They are of great service where the retarded delivery is alone due to weakness or absence of the uterine throes. The dose given here is per lb. of the body-weight of the animal:—

Liquid extract of ergot (by the mouth) ...	$\frac{1}{2}$ to 2 ♏.
Extract of ergot or ergotin (by the mouth)	$\frac{1}{10}$ to $\frac{1}{4}$ grain.
Ergotinine citrate (hypodermically)	$\frac{1}{500}$ to $\frac{1}{250}$ grain.
Ammoniated solution of ergot (by the mouth)	$\frac{1}{2}$ to 2 ♏.
,, tincture of ergot ,, ,,	1 to 4 ♏.
Sclerotic acid (hypodermically)	$\frac{1}{40}$ to $\frac{1}{20}$ grain.

THE CHEMICAL COMPOSITION OF HUMAN TEETH COMPARED WITH THOSE OF THE DOG.

That the teeth of animals offer a greater resistance to pathological influences than is the case with human teeth is a generally accepted fact for which various causes have been assigned. The length of life of the individual must necessarily be considered in making a comparison, for it is obvious that the teeth of a full-grown person have been subjected to destructive influences for about twenty years more than those of a full-grown dog. The nature of the food also plays an important part. Some further light has been thrown on the subject by M. Th. Gassmann, who has made a chemical analysis of human and dogs' teeth in order to ascertain whether there is any considerable difference in their composition. The results (which are recorded in the *Zeitschrift für Physiologische Chemie*, 1908, vol. lv., p. 455) are given in percentages in the following table:—

	Human Teeth				Dogs' teeth
	Canines	Milk teeth	Third molars	Teeth of aged persons	
Water	8·09	3·76	6·91	8·17	10·97
Loss on calcination ...	22·20	22·84	18·33	21·42	25·99
Lime	29·78	29·59	31·65	30·25	27·33

These figures show that human teeth contain more lime than those of the dog, and the third molars which are richest in lime contain nearly 5 per cent. more than is present in dogs' teeth. The loss due to calcination affords an approximate indication of the amount of organic matter present. It will be noticed that whereas dogs' teeth are the richest in organic matter human third molars are poorest in that respect. The quantity of phosphoric acid is proportional to the lime present. Human teeth are richest in chlorine and the salts of potassium, whereas in dogs' teeth the salts of sodium predominate. It is noteworthy that the third molars, which are the most prone to decay, are relatively rich in lime and poor in organic matter. M. Gassman draws the conclusion that there is a relation between the tendency to decay and chemical composition, the teeth most closely resembling human third molars being the least resistant to decay.

(*The Lancet.*)

Clinical Articles.

AN INTERESTING CASE OF HERNIA IN A MARE.

BY T. POWELL, M.R.C.V.S., NEWTON LONGVILLE, AND F. HOBDAY, F.R.C.V.S., KENSINGTON, W.

THE subject of the photograph was a well bred pony mare, aged 6, who had had one foal. There was no history to say how the hernia had been caused, but of late it had been so large that the animal was quite valueless for work.

The pony was cast, and an attempt at reduction was made, but as it was found that the rupture in the abdominal muscles was far too large to ever hope to permanently keep the bowel back, it was decided to have it destroyed. The photograph shows to what an extent on the one side it had proceeded, and the other side was equally as large.

MULTIPLE INTESTINAL CALCULI.

BY C. ROBERTS, M.R.C.V.S., TUNBRIDGE WELLS.

SUBJECT, heavy vanner gelding, aged 11, which had been in service of an oil company for several years. He had been in daily work, and had previously shown no sign of illness.

On December 2, about 6 p.m., he was seized with subacute abdominal pain, which became worse in two or three hours. The usual sedative treatment was adopted, but he died at 3 o'clock next morning.

Autopsy made same day, when it was discovered that the end of the double colon was packed with oat-hair calculi, varying in size from that of a marble to that of an ordinary orange. They were washed and counted, and numbered 873. They were irregular in shape, and showed smooth patches on the surface caused by attrition.

Remarks.—The number of calculi is unusally large. It is remarkable that they had caused no trouble before this attack, which was of so short duration (nine hours). The horse had never been seen to pass any calculi.

SOME CASTRATIONS.

BY LIEUTENANT A. J. THOMPSON, A.V.C., NOWSHERA, NORTH-WEST FRONTIER, INDIA.

At Nowshera, North-West Frontier, on June 14, 1908, I castrated five stallion ponies. The points that may interest some of my colleagues in the account of an everyday operation, are the time of year

Temperature Chart.

June, 1908.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.
	1		2		3		4		5	
15 F		102°	-	102°1	-	101°4	-	101°	-	-
16 S	101°3	101°	102°3	102°4	101°1	102°4	101°	101°1	-	-
17 S	101°	101°3	101°1	101°3	101°	101°-	101°4	101°1	-	101°
18 M	102°4	102°	103°2	102°	101°1	102°2	103°1	102°	101°1	101°4
19 T	103°4	102°	103°4	102°3	101°3	101°2	101°4	101°4	102°4	102°1
20 W	103°2	103°3	103°	103°2	101°4	101°3	101°2	102°1	102°4	102°3
21 T	103°1	103°2	102°3	102°2	102°	102°	102°4	103°3	102°2	102°1
22 F	102°2	102°2	102°3	102°1	101°1	102°4	101°2	102°	101°4	102°2
23 S	101°-	102°	102°2	101°1	101°9	102°3	101°1	101°4	101°1	101°1
24 S	101°1	101°2	103°2	103°	101°3	102°3	103°	101°2	102°1	101°2
25 M	102°	102°2	103°	102°	m	101°9	101°	101°4	101°	101°1
26 T	101°1	101°7	101°9	101°1	99°9	101°4	101°	101°2	101°	101°2
27 W	101°2	101°7	101°4	101°7	101°2	101°4	101°2	101°2	101°9	101°4

that the operation was performed, the ages of the animals operated upon, and the methods of operation employed. Appended is a detailed chart showing the class of animals, the age, and the rise in temperature recorded. The late period to which the operation on these animals had to be deferred was owing to the recent frontier disturbances. June, at any rate the second half of it, is the period at which one

experiences the hottest of the hot weather in these parts, and in consequence the operation was commenced at dawn, 6 a.m.

The first pony to be operated upon was an Arab stallion pony, aged 9. No difficulty whatever was experienced in this case. The operation was performed by knife and actual cautery, and there was no secondary hæmorrhage.

The second case was a bay Arab stallion pony, aged 5. The operation was conducted on similar lines to the first, but the off cord bled profusely and persistently, and I decided to put in a ligature. The artery was therefore ligatured with a silk ligature that had been soaked for one hour previously in a 5 per cent. solution of carbolic acid in water. Hæmorrhage was at once arrested, and the animal was allowed to get up.

The third pony was a grey Arab stallion pony, aged 7. This case presented no difficulty, and the operation was performed with the knife and actual cautery.

The fourth pony was a bay Arab stallion pony, aged 6. In this case the operation was conducted in the same way as in the preceding cases; but the near side cord had to be ligatured in the same way as in case No. 2, and the animal got up all right.

The fifth case was a grey Kabuli stallion pony, aged 8. In this case again the artery in the off-side cord bled freely, and could not be arrested by the hot iron, so a ligature was applied, and the animal was allowed to rise.

The points worth noting in these cases are that all the cases show a rise of temperature, reaching a crisis about the end of the first week. During this period their appetites had to be coaxed with delicacies such as lucerne, carefully selected Kabul grass, &c. The cases that were ligatured do not compare unfavourably with the cases not ligatured. During the period of fever every animal was dosed with quinine. All the ponies before being operated upon were in fairly hard condition. At the end of the fortnight after operation all cases had resumed light work, such as lunging. A great handicap to the more rapid recovery of these cases was the fact that it was not possible to arrange for the picketing of these animals in the open at night. The scrotal wounds had in all cases healed at the end af the first week.

SANDCRACK AND CANKER.

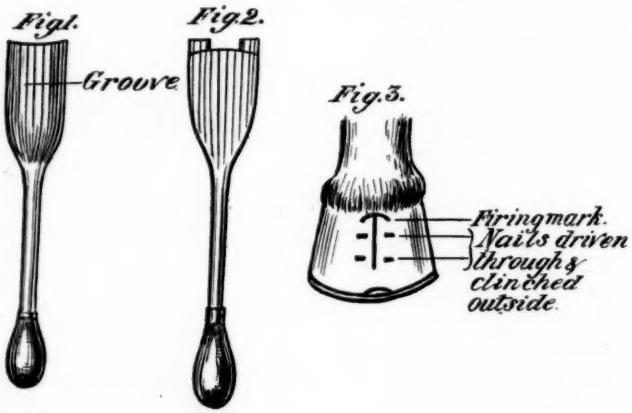
BY G. MAYALL, M.R.C.V.S., NORWICH.

THE treatment of sandcrack requires some thought, and it is questionable whether the best methods are always adopted in dealing with it. No up-to-date measures will be very creditable to veterinary science that do not include some attempt to cause the disappearance of the fissure. To clamp the crack and relieve solar pressure on it are only palliatives, and these things done the slit still remains. The V-shaped incision may relieve it, but it always seems to me to be open to the objection that it makes two more parts as large

as the crack itself or larger for the entry of dirt and organisms into the horny box. Even bandages come off, and then soiling occurs. I have treated many sandcracks successfully by the following method. It may not be new, but I have not seen it described elsewhere, so perhaps it will be interesting. An instrument having a piece on the end like the inch or inch and a half section of a gouge chisel (fig. 1) with a fairly sharp edge at its extremity is used to fire across the top of the crack.

Grooves each side of the crack are made with the instrument used when French clips are inserted (fig. 2). Small nails are driven through the wall from the bottom of the grooves at the level of half the thickness of the wall, or as near it as possible, and tar and tow and a bandage put on over the crack.

Unless one gets to the top of the crack with the firing mark, *i.e.*, as near the coronet as the fissure goes, the opening will not be properly



treated, and will not disappear with the growth of horn. When obliged to fire near the coronary band or over it lameness often occurs (even if not present) for a day or two, or longer, but the coronary band does not appear to be such a delicate structure as one has been led to suppose. Of course, if it is necessary to poultice after operating, it is assumed that antiseptic methods will be employed. A thick wall is better than a thin one for driving the nails, but a careful smith is a *sine qua non*. Fig. 3 shows the hoof operated on before the tar, tow, and bandage (carpet binding or wax ends) are applied.

Canker is a disease in the treatment of which, if successful, a man can gain some credit. Where the disease besides including the frog and sole has advanced up the wall and involved the laminæ treatment is practically useless. In several cases where Malcolm's method has been adopted, viz., firing the diseased parts, and applying pressure and ointment, or even dry powder, a difficulty has arisen in checking the disease at the cleft of the frog and its branches.

Recently I have cured two bad cases (one case where all four feet were affected) with lead nitrate, but it is perhaps in the method of applying it more than in the stuff used that I have gained success. I have picked out suitable sized lumps of the lead nitrate, and pushed them into the moist discharging clefts of the frog and its branches. The theory of pressure has thus been fully carried out absoluteiy *over all* the ground surface of the foot. By this method it has been done far more effectively than can be accomplished with ointment or finely divided powder. Leather soles and tow underneath are also necessary.

CONGENITAL MALFORMATION OF THE GENITALS AND RETENTION OF MUCUS IN THE UTERUS AND VAGINA.

BY J. W. POLLOCK, M.R.C.V.S., LOCKERBIE, N.B.

Synonym.—White heifer disease.

I have just read an article on this subject by Professor Moussu in the VETERINARY JOURNAL for November. This disease is rather common in some districts where Shorthorn cattle are reared, and is sometimes locally called "white heifer disease," because it is usually a white or light roan heifer which is affected. The heifers are usually between 18 months and 2 years old.

The symptoms are well described by Professor Moussu, but the obstruction is not always just at the same place as in his case. Sometimes the obstruction is an *imperforate hymen*, and these cases are the most easily operated on, as it is only necessary to puncture the hymen with the trochar, and, after the putrid fluid has escaped, the opening can usually be easily enlarged with the fingers. Other cases are like the one described by Professor Moussu, the walls of the vagina being united together so firmly that there is no exit for the uterine discharges collected in front. It is not always easy to get an exit made with the trochar in these cases, and sometimes impossible, as the walls of the vagina may be united firmly for almost its whole length from the urethral opening to the *os uteri*.

Lastly, the obstruction is sometimes in the *os uteri*, which is firmly closed, the uterine discharges being collected in the uterus. These cases are the most difficult to operate on *per vaginam*, as the vagina is narrower than in a normal heifer, and frequently the *os uteri* cannot be reached with the hand. If the case cannot be successfully operated on *per vaginam*, and the beast is in "good condition," it is usually best to advise slaughter. Even after successful operation the animals are scarcely fit for breeding purposes, a difficult parturition being usually the result. Once I had to perform embryotomy in order to get the calf away. The presentation was normal, but it was impossible to draw the calf away in the natural manner owing to the constriction of the vagina. The case had been one of imperforate hymen, apparently; had evidently been operated on, and afterwards put to the bull. Around the walls of the vagina, where the hymen had been attached, there was a thick fibrous ring. The heifer was a white shorthorn.

A NOTE ON THE USE OF QUININÆ SALICYLAS IN CANINE PRACTICE.

BY J. STEWART WOOD, M.R.C.V.S., PARKSTONE.

I SHOULD like to draw the attention of any of your readers who may not be familiar with it to the therapeutical value of quininæ salicylas in canine practice. I find it very effective in cases of gastro-intestinal derangement; it arrests vomiting, reduces the fœtor of the breath, and restores the appetite. I also prescribe it with advantage in distemper and other febrile complaints, and as a general tonic. I get the best results by using the drug in the form of a powder, and rarely find it is rejected. The dose for a fox-terrier is from 2 to 3 grains, given twice a day, about one hour before food.

INTERESTING INTESTINAL CONCRETIONS IN THE HORSE.

SIX intestinal concretions found in the great colon were brought to the pathological institute. The largest of the concretions was an almost regular tetrahedron with a rounded summit. The height of the stone was 15·3 cm., and its weight 2,255 grammes. Five of the concretions formed a group, as shown in the figure. The surface of the stones

Intestinal concretions from a horse. Group of tetrahedral and disc-shaped segments (reduced).

was rather smooth, with little indentations scattered all over. They were grey in colour. The tetrahedric form, no doubt, arose from the rubbing of the stones together, and it is improbable that each segment had a separate nucleus, but that the contact of the concretions caused increase in size.

Besides these six stones, five further smaller ones of tetrahedric form were found. The stones were not cut through, because of spoiling the specimen by so doing.

(*Bericht König Tierärzt. Hochschrite zu Dresden.*)

Abstracts and Reports.

THE HISTORY OF THE MEAT INDUSTRY.[1]

BY LOUDON M. DOUGLAS, LECTURER ON THE MEAT INDUSTRY, COLLEGE OF AGRICULTURE, EDINBURGH.

THE meat industry sprang into existence in the most casual manner, and although from ancient times express laws were enacted, clearly defining what animals were suitable for food, these laws were not generally adopted outside of the Jewish nation. These prohibitions generally had a religious tendency, as it was believed that the blood was the seat of the soul, and therefore became sacred.

Throughout the various ages there was very little attempt at education in connection with the meat industry, and even at the present day it is a notable fact that organized education on this subject does not exist. This would seem to be a curious matter, considering that we derive so many articles of daily food from a bullock. Notwithstanding, however, the absence of technical knowledge the various nations have found what foods suit themselves, and it is curious how the foods adopted by various nations have translated into mechanical energy necessarily corresponding to the nature of the work they have to do and the climate in which they live.

Many instances of curious diets can be given, and there are many curiosities in foods which, to our mind, are merely repulsive; but we have undergone great transition in the United Kingdom also, as may be illustrated by the fact that Queen Elizabeth breakfasted on meat, ale and bread, and that was the common way of living at the time.

We live largely on imported food stuffs, and it is curious to note that the yearly consumption of meat of all kinds per head of the population amounts to 121·77 lb.; of this 67·52 lb. are home grown, and 54·25 lb. are imported. The balance during late years, however, is gradually tending the other way, and this demonstrates the fact that we cannot produce anything like the quantity of meat which we consume. Going back into ancient times it is also noticeable that there never was any justification for the phrase "The Roast Beef of Old England," for then, as now, the poor people did not have any beef at all; in ancient times the rich people were compelled to slaughter their cattle in October, owing to the absence of winter feeding, and salt down the carcases, so as to serve until the spring. As a matter of fact, we have better beef to-day than ever before in the history of the nation, and this difference is largely attributed to the fact that we import so much.

The largest cattle market in the world is at Chicago, and Smithfield (London) is the largest meat market, and between these two there seems to be a daily intercourse, although they are so far apart.

There have been four stages in the existence of the inhabitants of the world; firstly, the savage state, when the struggle for existence was merely a contest with the lower animals for food. The second was that of the nomadic existence, and the development of ownership of flocks and herds. The third state was that of the early

[1] Abstract of Lecture delivered November 2, 1908.

agriculturalists who tilled the soil and multiplied its resources. The fourth state is the greatest of all, and is associated with the development of industry. In everyone of these conditions, however, the desire for food predominates as the principal factor.

The principal use to which animals were put in ancient times was that of sacrifice, and even at the present day among the Arabs there is a remnant of this curious practice. In the Roman period, however, this idea was modified and abattoirs were instituted under the name of "macellæ." These were really the first abattoirs, and the mystery which surrounds their coming into existence is a curious study. The literature on the subject of the Roman period to the present day is very scanty, and in order to find references one has to search in many unlikely places, which shows how utterly in want of organization the industry always has been.

When the trade guilds were instituted the fleshers happily were recognized as one of the established trades, and in this way there has sprung up in various countries many quaint customs in connection with the industry which are perpetuated to the present day. It was necessary before a meat purveyor could become free of his craft that he should serve an apprenticeship and pass an examination. That rule, however, was abolished along with the trade guilds in 1835, and from that day on to 1888 the industry was totally disorganized. In that year the Meat Traders' Federation of the United Kingdom came into existence, and since then there has been a steady upward progress in connection with the meat industry of the United Kingdom. The Federation now consists of 144 affiliated associations with about 20,000 members, and is in such a strong position that it is able to check legislation which might cripple the trade; but it is doing more than that, it is seeking to develop the best sides of the business and to impart to it some methods of order, and as an outcome of this desire there is every possibility that the opportunities for academic instruction throughout the United Kingdom which have been inaugurated at the College of Agriculture, Edinburgh, will, by the influence of the National Federation, be extended throughout the whole country.

NOTES ON OSTRICH PARASITES.

BY W. ROBERTSON, M.R.C.V.S., DIRECTOR OF THE VETERINARY LABORATORY, GRAHAM'S TOWN.

THE intestinal parasites which infest the ostrich with the greatest frequency may be classed under three varieties: The tape-worm, the wire-worm, and a new arrival on the scene akin to the Guinea-worm of man.

The ostrich tape worm (*Tænia struthionis*) runs to about 2 or 3 ft. in length, seldom longer, and has a distinct head with a proboscis, four suckers, and an armed rostrum or beak fringed round with hooks.

Tape-worms are principally met with in young birds.

Treatment.—Many agents are advertised for their removal, turpentine being the favourite.

I find common petrol, as used in motor cars, a cheap, effective,

and safe agent. Give from 3 to 6 ounces, according to the age of the bird, fasting.

I have used this preparation largely in weakly and poor birds, and have not yet had a fatality. It is curious to note how long the smell of the petrol will persist in an ostrich's gizzard. I have distinctly noticed the odour there days after when making a *post mortem*. Petrol costs about 2s. 6d. per gallon.

The Wire-Worm.

Strongylus douglasii are met with in the upper half or rather two-thirds of the stomach (Proventriculus), not in the true gizzard at all, and firmly attached to the membrane principally near the entrance of the œsophagus. By their irritation they cause the formation of a thick, starchy film, which further protects them against external influences such as drugs.

There is some difficulty of dealing with these parasites. The worms are at the upper end, and the whole organ must be filled with fluid before it can come in contact with them; this is almost impossible, as the lower end is open and gravity will cause the fluid to escape that way.

Treatment.—So far carbolic acid and its preparations have met with the best success, and while on the treatment for wire-worms I would like to say that when one is experimenting with remedies for this parasite, it is necessary to kill a good many birds in order to accurately observe results. It is no good to dose birds, and because they appear to pick up in health to attribute the improvement to some remedy. Again, all the wire-worm will disappear from a bird's stomach shortly after death, say over-night, being dissolved in the stomach juices. With the endeavour to obtain some remedy for wire worm less drastic than carbolic, I think I have ransacked the book of drugs, and latterly have tried with much success the following—grasping the difficulty of getting the fluid drugs into direct and certain contact with the parasite. I give lime, followed by sal ammoniac. This drug, in the presence of lime, gives off free ammonia (anyone can try this experiment by adding a solution of lime to a solution of sal ammoniac, and the smell of the gas will at once be noticed) which is most hurtful to animal life.

I starve the birds, and give a dose of paraffin, and five hours after give an ounce of lime in half a bottle of water, followed at once by an ounce of sal ammoniac in another bottle of water. I have never seen a bird the least disturbed by the dose, and its action upon the wire-worm is most effective. I have killed many birds twenty-four hours after drenching (birds from that lot having been found teeming with the parasite) and have had the greatest difficulty in finding a few strongyles, and there is a freedom from the excoriated or burnt condition of the stomach which frequently follows the drenching with carbolic acid.

This dose can be repeated in a fortnight.

I do not hold or claim that this is an absolute eradicator of wire-worm, but I think it has proved sufficiently successful in experiment to justify its trial, on a large scale, by the practical ostrich farmer, to whose attention I commend it.

(*Agricultural Journal of the Cape of Good Hope.*)

ANIMAL DISEASES IN NEW ZEALAND.[1]

Black-leg.

The regulations framed for the purpose of controlling this disease in Taranaki have been enforced during the past year with thoroughly satisfactory results, over 33,000 calves having been inoculated, as will be noted from Mr. Young's remarks below.

The whole of the vaccine used was prepared at the Wallaceville Laboratory, while the work of inoculation was carried out by Messrs. Deem, Budge, and Brittain, Inspectors of Stock, under the supervision of Mr. Young, Government Veterinarian. Concerning this Mr. Young has furnished me with the following report:—

"At the beginning of this season the officers settled down to their work in the face of difficulties, and it is, therefore, the more pleasing to report that the work has been carried out not only with the utmost success, but without the least trouble or annoyance to any one. This was principally due to the action of the Department in leaving the Inspectors and myself free to carry out the work as it presented itself to us.

"During this season, ending March 31, over 33,000 calves were vaccinated against black-leg, and since that date the number has been increased to over 34,000. The number of deaths reported to the Inspectors of Stock as having resulted from black-leg before vaccination totalled thirty-seven, and deaths from black-leg after vaccination, but not due to that operation, eleven; while the cases of uncertainty, whether the cause was due to direct vaccination or direct infection, otherwise did not exceed five.

"The above results must, I think, be looked upon as satisfactory, especially as this season a large number of calves were slaughtered within a few days of birth, thus leaving only the best, and these being subjected to better treatment, were, of course, rendered all the more susceptible to the disease."

The thorough success of the inoculation from every point of view is shown by the very small total number of deaths from black-leg which have come under the notice of the Inspectors, and particularly by the fact that only sixteen of these occurred among inoculated animals. Both Mr. Young and the Inspectors are to be commended for this gratifying result, which, there can be no doubt, is largely due to the careful and efficient manner in which the work has been carried out by them.

Continuing his report, Mr. Young goes on to say:—

"Any alterations of the existing regulations should now be made with a view of having them permanent for a few years, and I would therefore recommend—

"(1) That the present quarantine district remain, except that the southern boundary might be drawn back to Patea, but not to the Manawapou, as a case occurred over its south side this season.

"(2) That the removal of calves out of the district be subject to the now existing regulations, except that the age should be reduced from eighteen to fifteen months.

[1] Abstract from the Report of Mr. Gilruth, M.R.C.V.S., F.R.S.E., Chief Veterinarian to the Agricultural Department of the New Zealand Government.

"(3) That it be left to the discretion of each local Stock Inspector to decide in which part of his district the calves require to be vaccinated, and which parts not.

"(4) That no calf over twenty-one days old shall be sold privately, or exposed for sale, without the written authority of the Inspector of the district from which it is to be removed.

"I offer these recommendations after consulting the Inspectors of Stock, as I am of opinion that no alterations in existing regulations should be made without first consulting the men engaged in carrying out the work."

Of these suggestions, the first, regarding the boundary, requires careful consideration. Had not one outbreak of black-leg (in which four calves died) occurred on the southern side of the Manawapou River, I should have been inclined to indorse Mr. Young's opinion that the southern boundary of the quarantined district might be brought back from Wanganui to Patea. As it is, it would, I consider, be wiser to retain the present boundaries for another year.

With regard to Mr. Young's remaining recommendations, I advise that the present regulations be amended in accordance with them.

The result of the year's operations confirms the opinion expressed last year that the disease has now been got under control. It will, however, be necessary to continue compulsory inoculation for some years to come, although, as recommended by Mr. Young, the regulations regarding this may be relaxed to some extent in the direction of allowing the Inspectors to use their discretion in the matter of compulsorily inoculating calves in areas where no cases of the disease have yet been known to occur. This discretionary power would, however, need to be exercised with great judgment. I am confident that, if the same arrangements as this year's for carrying out work in connection with black-leg be continued, every care in this direction will be taken.

At this stage it is of interest to note the progress made by the disease in Taranaki, and the abrupt and most satisfactory manner in which its further spread was stopped by the measures adopted by the Department. In this connection Mr. Young writes as follows:—

"To give a fair idea of the work done by the Department in connection with the disease, it is necessary to give a brief review of its past history. Up till 1902 the reports of the Inspectors of Stock merely mentioned the disease as existing at Tikorangi, and recognized it as black-leg; this goes to show that up till that time the disease was limited to a small area. In 1903 the Inspectors reported the existence of black-leg in Clifton County, New Plymouth district, Kaponga, Mahoe, Awatuna, Opunake, and the northern parts of Hawera district—this by way of showing how rapidly the disease spread over a large area. Special investigations made by me confirmed these reports, and, although accustomed to infectious and contagious diseases, the rapidity with which this one had spread, and was still spreading, leaving a heavy mortality in its wake—twenty, thirty, or even forty deaths on individual farms in one year—was, to say the least of it, alarming, and, in my opinion, in now looking back over the past three years' work, only the energetic measures adopted by the Department, and the untiring efforts of the officers engaged in working these

measures out saved the Colony from being overrun by one of the most deadly and costly diseases to which young cattle are susceptible.

"To expect that the drastic measures then adopted would be carried out quietly was to expect too much, and meetings were held to protest; at the same time many came forward—especially the auctioneers—and assisted the Department. Following this there was some trouble about calves dying after vaccination from black-leg."

No cases of black-leg outside Taranaki came under the notice of this division during the year.

Contagious Abortion and Sterility.

Dairy-farmers are still suffering severe losses from these allied diseases, and it is a matter for regret that such should be the case. Undoubtedly one great reason for their continued prevalence is the unrestricted sale both of bulls which have been in direct contact with affected cows and of affected cows themselves. Legislation to prevent this is badly needed—indeed, it would appear to be an absolute necessity for the stamping-out, so far as is possible, of the disease. In spite of the efforts made to disseminate information to farmers by means of lectures, leaflets, and personal advice, it is still a common occurrence to find abortion or sterility, or both, existing on a farm, and the owner of the herd in ignorance of the true nature of the trouble. One still finds the bull blamed for the failure of the cows to "hold," and, being sold in consequence, thus constituting a medium for conveying the infection to the herd of his purchaser.

Communications from farmers and others frequently reach the laboratory describing the losses incurred in consequence of this disease. To mention a few instances, a farmer near Dannevirke sold out his farm "because he could not get his cows in calf." Another, near Woodville, was in similar trouble. He had three bulls, and had "changed them frequently" (presumably replaced them frequently), but was unable to get his cows in calf. Of three Taranaki farmers, one had forty out of eighty cows not in calf; another twenty-five out of forty; another thirty out of forty.

The following report from Dr. Stapley, dated April 11, 1906, is of interest:—

"Abortion is throughout this district, so much so that preventive measures are necessary in the routine of dairy-work, otherwise through delayed fecundation the cow does not give milk in proper season. Where sublimate treatment has been well carried out, I have met no instance where it has failed to do that which is claimed for it. I think, however, dairymen are too prone to apply only one injection, and, where this one injection fails, to condemn the remedy and not the mode of application. The small farmers who claim they cannot understand the work have, in my experience, made no conscientious effort to understand it, adopting the attitude that the Government should teach them individually in place of their learning from adequate leaflets. Some over-zealous men have killed cows by over-strength solutions. The desire to have "something strong" is so great that I find it necessary to caution against exceeding one tabloid to 24 oz. for sterile cows, and half-strength for in-calf cows. In the Mangamaire district very poor work has been done—absence of premises and hock-deep slough render treatment unsatisfactory.

"The tendency to traffic bulls of poor quality is bad. The treatment of these bulls is almost as easy as the treatment of cows, and there seems to me no reason for dairymen to get fresh bulls directly they discover they have abortion in the herd.

"Seeing that the treatment by mercuric-chloride injections has proved almost uniformly successful when properly applied, that full particulars as to the method of application are furnished, together with the necessary material, and that advice is available to all and is freely tendered, this disease should not continue to trouble the dairying community to the extent it does.

During the year mercuric-chloride soloids to the number of 17,070, sufficient for the treatment of a similar number of animals, were despatched from the laboratory. When to these are added the very large number of doses supplied locally to farmers by chemists (which one has no means of estimating), some idea of the continued prevalence of the disease can be gathered."

Contagious Mammitis.

This troublesome disease still persists in the Colony, particularly in the North Island, and is responsible for rendering a large number of otherwise good cows partially or wholly useless for dairying purposes. No isolated outbreak of such severity as to cause serious mortality, as was the case in that described in the annual report of 1905, has come under notice, but several instances have occurred where owners of herds have suffered considerable financial loss as a result of infection spreading through their cows. In some cases, at any rate, the owners have largely themselves to blame for this, in that they did not keep a sufficiently close observation on the condition of their cows' udders and teats and the character of the milk-secretion, thus allowing the disease to become well established and distributed before they realized the position.

Contagious mammitis is pre-eminently a disease in which thorough preventive measures must be, especially in the present state of our knowledge as regards treatment, an absolutely essential factor in all efforts directed at the checking of its spread and the minimizing of its ill effects when it has gained lodgment in a dairy herd. A thoroughly carried-out periodic inspection of all dairy herds (as recommended in the 1905 report) is badly required. For this to be really effective, however, it is obviously a primary necessity that the officers carrying out the work of inspection must possess a thorough knowledge of the clinical symptoms of disease, and, moreover, be qualified to advise owners as to the treatment of affected animals and the adoption of measures necessary to insure the prevention of the spread of infection.

Regarding treatment, much of the ill success which has apparently attended the boracic-acid treatment is probably due to the fact that it has not been commenced until the disease has been in existence for some time, and, as a result, the injected fluid does not come directly into contact with the whole of the parts to which the specific organism responsible for the disease has gained access. Again, it is open to question whether the treatment, even if commenced in time, is always applied thoroughly, and whether the instruments, especially the teat-tube, used are always kept thoroughly

clean. The teat-tube should always be boiled immediately before use, and if more cows than one have to be treated at the same time, it should be sterilized after use on each animal. If a dirty tube be used, it means that other organisms will be introduced, which may either accentuate the virulence of the contagious mammitis streptococcus or set up more trouble on their own account. Were the treatment by boracic-acid injections always carried out under exact conditions, the percentage of good results would be certainly far higher than appears to be the case at present.

Pressure of other work, due to the Chief Veterinarian's absence on leave, combined with the lack of facilities in the shape of proper housing accommodation for experimental cattle at the laboratory, has prevented any exhaustive experiments in the direction of finding a more effective form of treatment being carried out.

Acute Stomatitis in Lambs, with Infection of the Ewe's Udder.

Last year attention was drawn in the annual report to an outbreak of what was termed acute dermatitis of the face and ears of sheep occurring annually on a large sheep-station, but confined to one large paddock, and only being manifested at a certain period of the year—viz., the months of December and January. The cause of this form of dermatitis was shown to be the presence of a coccus possessing peculiar cultural characteristics, and, although the actual method of inoculation was undetermined, there remained little or no doubt but that the agency of vegetable prickles and spines occupied an important part.

During the past spring, in a small flock of lambs belonging to a farmer in the North Island, a peculiar affection of the lips and mouth was brought under our notice, primarily through Inspector Dalgleish, of Hunterville, and subsequent investigation proved that this disease was caused by the same coccus as that found to be pathogenic in the southern outbreak amongst older sheep, although the actual lesions produced were somewhat different.

The history of the outbreak of lamb stomatitis, as reported by Inspector Dalgleish and confirmed by Mr. Reakes, who visited the property later on to pursue the investigation into the cause, is as follows:—

The owner, Mr. L., had been in possession of the property in question for over five years, but previous to last spring no affection whatever of the mouths or lips of any of his flock had been observed at any time. The land whereon the sheep were grazing is rough hill country, and rather difficult to muster when ewes are with lamb at foot. Soon after lambing, the owner observed several lambs with what he described as "scabs" affecting the lips. Considering that the disease might probably be contagious, he slaughtered and buried the first ten or twelve he found affected, Fresh cases of the disease, however, being observed later, he asked Mr. Dalgleish to visit his property and arrange for an investigation.

Owing to the difficulty of mustering the flock, Mr. Dalgleish could only secure one affected animal for examination, and he reported that the lamb was affected with "scabs around the corner of the mouth on both sides. Under the scabs the flesh appears inflamed, and when

a scab is rubbed off blood comes readily. Herewith I send a smearing of this blood."

Examination of the smears was unsatisfactory, demonstrating the presence—as was to be expected—of numerous organisms of varied character. Consequently, Mr. Dalgleish was telegraphed asking him to forward, if possible, an affected lamb alive. In a few days I was advised that a typical case was being despatched to the Laboratory, also that the disease was spreading amongst the other lambs with great rapidity. Mr. Reakes accordingly visited the farm with the utmost despatch in order to make inquiries and advise. He reported that the flock consisted of about 400 ewes, with about an equal number of lambs, pasturing on some 400 acres of well-grassed hilly land. The disease made its appearance soon after lambing, but as to its introduction, no evidence was available. After the lambs were subjected to the usual operations of earmarking, castration, and docking, it was observed that about 50 per cent. developed more or less extensive ulcerative sores on the stump of the tail, while a considerable number developed similar lesions around the wounds made in the ears as marks of identification, indicating, of course, a conveyance of the causative agent by means of the instruments used in these operations. Many of these cases of tail and ear ulceration did not exhibit concomitant lesions of the lip and mouth. Curiously enough, in no instance were lesions found present in the region of the scrotum, a fact the more remarkable when it is considered that the disease had been transferred in many cases from the lips and mouth of affected lambs to the skin of the mammary gland and thighs of the mother, manifesting itself there as a distinct papular eruption of the teats and mamma.

As to treatment, Mr. Reakes found that the owner on his own initiative had been applying a 10 per cent. solution of copper-sulphate —a treatment fraught with considerable danger; but as it had proved very efficacious in a large number of cases which had recovered, its continuance could not well be discountenanced. It is of some importance to note that the same treatment had also been applied to the sores on the teats of ewes with apparent success, and that, with the exception of the lambs killed by the owner in the early stage of the outbreak, no deaths whatever had occurred.

Symptoms.—The following description of the symptoms is made partly by observation of naturally affected animals, of which four were received at the Laboratory (three being despatched by Mr. Reakes during his visit), and partly by observation of experimental cases inoculated, some with material direct from lesions, and some with artificial cultures:—

The first indication consists of a slight swelling of the lips about the junction of the skin and mucous membrane. Gradually the swelling increases till the lesion assumes a distinct warty appearance with a dark scab. On forcibly detaching the scab the surface underneath is found to be raw and bleeding. The swelling still gradually increases in size, spreading to both lips and backwards towards the commissure. The general appearance remains that of a large diffuse wart, purplish in colour, sometimes apparently ulcerating, and bleeding readily on being touched. The swellings may be separate or confluent. They are usually sharply circumscribed, and project from the

surface to an extent varying from ¼ in. to ¾ in. At first the inner surface of the lips and mouth generally is not affected. But, later on, raised, livid, papillomatous, partly ulcerating lobulated patches, varying from ¼ in. to ½ in. in diameter, with irregular borders, and often covered with a slimy adhesive false membrane, appear, chiefly in the inner surface of the lips and on the gums, but also on the palate, and even on the surface of the tongue, especially towards the posterior aspect. These patches vary in size and readily disappear spontaneously, arising, as they apparently do, from fresh infections. Towards the climax of the infection the whole of the lips exhibits a hard leathery appearance, the animal has a haggard expression, and the general condition becomes much impoverished through inability to feed properly. When this stage is reached, however, recovery rapidly occurs, and in from four to six days all trace of lesions may disappear spontaneously. So far as the lesions of the lips are concerned, there is no actual ulceration if no injury occurs. Those within the mouth, however, show a slight tendency to ulcerate, but as these lesions are comparatively transitory, according to our observations, both on cases where the disease has been naturally contracted and on those artificially affected, the ulceration is probably more apparent than real. The skin of the udder becomes affected only through contact with the affected mouth of the lamb. A papular eruption occurs first of all on the teat, and spreads either directly or indirectly to the whole of the skin of the udder, and even to the thighs. Each papule is distinct, with a fairly broad base and an apex covered by a small dark scab, but occasionally underneath there is a small area of pus the size of a pin-point. On removal of the scab the papilla is found to be congested, and, in fact, to have all the characteristics of a large pimple. They are not painful, and the ewe is not seriously inconvenienced, to all appearances, by their presence. The lesions produced where the virus was artificially introduced during operation, as at the tail and ears, are characterized by granulations, the formation of dry hard scabs, and ulceration of the surrounding skin for an area of ¼ in. to ½ in. in diameter. In no case is there any evidence of the formation of pus. As with the lesions of the lips and mouth, the tail and ear lesions gradually recover spontaneously. The temperature is not marked by any great increase even in cases where the disease is very aggravated, it rarely remaining at over 103° F.

Nature of the Lesions.—Microscopical examinations of smears from affected regions demonstrated the presence of a large number of lymphocytes, chiefly multinuclear, and many containing organisms, generally diplococci. Sections of the diseased tissue demonstrated simply a granulomatous condition, and staining by the method of Gram showed up the characteristic cocci scattered throughout, but chiefly underneath the surface.

Experiments: Lambs.—As microscopic examinations of smears made from the surface of the swellings underneath the scabs demonstrated an enormous number of various kinds of organisms, it was necessary to determine in the first place whether the disease was capable of being transmitted by inoculation or not. Accordingly, a healthy, well-developed, single lamb running with its mother was secured, and, after thoroughly cleaning and treating antiseptically the lips, slight scarifications were made by a needle along the edge of the upper lip

underneath the left nostril. On this scarified surface a small fragment of diseased tissue was rubbed. A small area of the mucous membrane covering the gum was also scarified and inoculated in the same way. For the first two days there was no appearance of any result of the inoculation, and it seemed to have failed, the slight scarification having completely healed. On the third day, however, a faint congestion and roughness was observed where the lip was inoculated. This rapidly increased till by the sixth day the sore was typical, presenting the characteristic warty appearance, with the dark-coloured scab; but at this period there was no evidence of the gum inoculation having succeeded, due, no doubt, to the fact that the virus had been speedily removed through the action of the tongue. By the ninth day this swelling had spread very considerably, and had infected the lower lip opposite. The swelling at the point of inoculation was very marked, and protruded, like a very large though comparatively smooth wart, for at least ½ in. from the lip.

By the twelfth day the growth on the lips had increased to a marked extent, practically involving the whole of the mouth. Growths had appeared on the gums and roof of the mouth. The mother had developed a crop of small papules around each teat and on the surface of the udder. These papules were very pronounced, with broad base of ¼ in. diameter, red in colour, and covered with a small dark scab, removal of which induced a slight oozing of blood. These papules did not appear painful to the touch and showed no great tendency to suppurate, though one or two ultimately developed a small quantity of pus. No more serious phase of the disease affected the udder, which continued to secrete milk and remained otherwise healthy.

During the following week this lamb remained in much the same condition so far as the lips were concerned. The lesions within the mouth varied very considerably, on some days having almost disappeared, to reappear on another spot the following day.

By the twentieth day, however, gradual and definite recovery was evident, and within a week was established. Naturally, the lamb lost condition in spite of being artificially fed, but otherwise it remained healthy. As before remarked, the temperature never rose beyond 103° F. No curative treatment whatever was employed in this case. As to its appearance when the lesions were at their most advanced stage,

Amongst the various organisms which had been isolated from the lesion with which this case has been inoculated was a coccus with every characteristic, culturally, of that described as affecting the face of older sheep the previous year; and in order to ascertain if the same coccus were present in the artificially produced lesions of this case, the surface of the warty growth was cauterized, and a small portion removed from the centre. Various media were inoculated and smears examined. A coccus was found to predominate so largely that its isolation was easy. That it was of the same variety as described last year was soon apparent, and cultures were used for subsequent experiments.

Inoculation of Lip with Culture.—A healthy lamb was inoculated in the same way as the previous case, the material used being a small quantity of broth subculture of the coccus isolated from the experi-

mental case. No evidence of success having followed this experiment was detected until the fourth day, when swelling and roughness of the lip was observed. This swelling rapidly increased, pursuing a course similar to the previous case, with the exception that the labial swellings became even more marked, protruding for nearly an inch in extent. The gums, palate, and tongue also became affected with transitory lesions in much the same way as already described.

Similar papules developed on the udder, teats, and even the bare skin of the thigh of this lamb's mother, as on the mother of the subject of the previous experiment, but, as before, this was not attended by any serious concomitants.

This lamb was killed for examination and for the purpose of having the head and lesions properly drawn, so that spontaneous recovery could not be observed as in other cases. The appearances then were as follows:—

Head.—The lips, where inoculated, were tremendously swollen, projecting for almost an inch. At this seat the lesions had continued to increase in gravity. Other portions of the lips and gums had become inoculated from time to time, but with the exception of certain patches had readily recovered.

There was a patch on the roof of the mouth, reddish, and about ½ in. in length. There were also four small patches on the tongue commencing to ulcerate. The internal organs were normal.

Skin Inoculation by Scarification.—Several attempts were made to inoculate the surface of the skin of the flank after scarification by means of cultures and of actual diseased tissues, but beyond the production of a diffuse inflammatory slightly granulomatous area, with a few purulent points which did not persist beyond three or four days and rapidly recovered, the results were negative.

Subcutaneous Inoculation.—A healthy lamb was inoculated in the subcutaneous tissue of the thigh with 0·5 cc. broth culture of the coccus, it being the third generation of that isolated from the first experimental lamb. The following day the animal was very lame, but there was no swelling and no evidence of inflammation at the seat of inoculation, although the leg underneath was considerably swollen. The temperature was 103° F. Next day the leg was carried, there was great pain, some discoloration of the skin at the seat of inoculation, and the general swelling was increased, but the temperature remained at 103°. Gradually the swelling of the leg continued to increase, reaching as far down as the hoof, and extending upwards to the pubis, while underneath the skin patches of blood-extravasation appeared in streaks.

Ultimately the swelling spread gradually upwards along the floor of the abdomen, and the animal became extremely emaciated, although the temperature never went higher than 104° F. On the fifteenth day after inoculation the case was killed for examination, the following being the *post-mortem* notes:—

Inoculated limb (left hind).—The whole of the subcutaneous tissue thickened with fibrinous deposit infiltrated with large quantity of straw-coloured serosity. The infiltration extends from the pubis to the foot, all round the limb, infiltrating particularly the sheath of tendons and to some extent the intermuscular fibrous tissue. The swelling extends along the left side of the floor of the abdomen to the

point of the thorax. In this region, probably owing to the pressure when lying down, there is less serosity and more thick, fibrinous material, which is interspersed with yellowish, small, irregular caseous areas.

Just at the point of the thorax there was a sac the size of a small egg, containing almost clear fluid.

The thickening underneath the abdomen and thorax was irregular, varying from ½ in. to 2 in.

The kidneys were enlarged, extremely pale, and almost waxy in appearance and consistency.

The liver was apparently normal, as were the other organs.

Pure cultures of the coccus were isolated from the serosity at different portions of the swelling.

Sections of the liver showed no abnormality. The kidneys showed the glomeruli extremely affected with cloudy swelling, as were the cells lining the convoluted tubules, but otherwise there was no indication of any pathogenic change.

Other Animals.

Guinea-pigs inoculated with material from actual lesions and with cultures of the coccus remained normal.

Rabbits.—A rabbit was inoculated in the thigh with a small fragment, pulped in distilled water, of a growth removed from the gum of an affected lamb. For six days the animal appeared normal as regards its general health, and no noticeable swelling of the inoculated limb was observed. On the seventh day it was found dead, a *post-mortem* examination disclosing an œdematous condition of the whole of the subcutaneous tissues of the limb, the skin throughout being firmly adherent. The œdema consisted of a straw-coloured but slightly blood-tinged serous fluid. All the internal organs appeared normal. Smears made from the œdematous fluid disclosed the presence of myriads of small cocco-bacilli, also a few longer bacilli, and others short and thick.

It would appear that accidental contamination of the inoculated material had occurred, probably acquired at the time the portion of tissue used was removed from the mouth.

A lamb was inoculated with the fluid by scarification of the thigh and lip. Both seats of inoculation remained unaffected save a slight swelling, with, in the thigh, only an indication of commencing formation of pustules, which quickly disappeared.

Agar and serum tubes inoculated from the œdematous fluid gave negative results.

A second rabbit was inoculated with 0·25 cc. of the pure broth culture that was used with the second experimental lamb. It remained unaffected except for a slight enlargement of the superficial inguinal gland, the swelling being noticeably hard, but not painful.

Characteristics of the Coccus.—On agar and serum small circular colonies of a pale yellow colour, with smooth edges, are formed with a slightly raised centre. Broth cultures rapidly become cloudy, and later show a well-marked deposit. Gelatine slopes are liquefied in four days. Milk is coagulated in from twenty-four to forty-eight hours. In liquid media the cocci are in groups, usually distributed as staphylococci, but occasionally showing a diplococci arrangement.

Indol is not formed. It will be noted that these cultural characteristics agree practically uniformly with those of the coccus described in last year's report.

It will be seen that the results of subcutaneous inoculation of cultures of the coccus isolated from the southern cases and that isolated from the northern outbreak, when compared, are very similar; there was intense swelling and lameness, with much production of fibrinous subcutaneous exudate but no pus, while there was no indication of a tendency to ulceration of the skin.

These outbreaks, as recorded, are of some interest, especially in view of the doubts which exist as to the actual causal agent of so-called ulcerative stomatitis in lambs in other countries.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Fellowship Degree.

A meeting of the Board of Examiners for this degree was held on December 21, at 10, Red Lion Square. Four candidates entered for the examination, and all passed and obtained the Diploma :—

Mr. James Spreull	Mr. B. De Vine
,, A. S. Head (Captain)	,, C. W. Townsend

The examiners were Messrs. J. Malcolm, W. Hunting, and Professor J. Macqueen ; Mr. W. J. Mulvey being in the Chair.

Fred Bullock, *Secretary.*

Examinations in London.

At a meeting of the Board of Examiners held on December 9 for the written, and on and between December 15 and 20 inclusive for the oral and practical examinations, the following passed their final examination and received the Diploma of the R.C.V.S. :—

Mr. C. S. Addison	Mr. J. Martin
,, J. D. Broome	,, E. Middleton
,, J. B. Buxton	,, H. B. Nixon
,, G. W. Dunkin	,, A. J. S. Reynolds
,, H. V. Dier	,, T. V. Somerville
,, W. D. Halfhead	,, E. J. Turner
,, R. C. Matthews	,, S. B. Vine

The following passed their third professional examination :—

Mr. B. R. Body	Mr. U. F. Richardson
,, A. A. Comerford	,, W. Sewell
,, H. C. D. Golledge	,, O. Stinson
,, W. D. John	,, R. C. G. Thwaytes*
,, R. E. Lloyd	,, P. R. A. Thrale*
,, O. F. Maynard	,, P. R. Thompson*

The following passed their second professional examination :—

Mr. S. G. M. Hickey	Mr. C. W. Perrin
,, F. E. Heath	,, R. Wynne Williams

The following passed their first professional examination :—

Mr. W. H. Dennett	Mr. C. Sisodia
,, E. J. Lainé*	,, J. Facer
,, L. G. McGuire	

* Passed with Second Class Honours.

Examinations in Ireland.

The following passed their fourth professional examination and were registered as members of the Royal College of Veterinary Surgeons :—

Mr. J. D. Ferguson
„ C. H. Lambert
„ P. J. Malone
„ J. J. Walsh
Mr. J. Y. Bogue
„ W. Devane
„ J. V. Mahony
„ D. Barry

The following passed their third professional examination : —

Mr. J. Fox
„ J. Plunkett
„ T. G. S. Bogue
„ J. Dodd
„ W. J. Ferguson
Mr. S. Hunter
„ R. O'Donnell
„ E. J. Phair
„ M. Reidy

The following passed their second professional examination :—

Mr. D. English
„ W. Flanagan
„ G. A. Kelly
„ P. McCormack
„ T. L. Shea
„ J. Smith
Mr. F. J. Weir
„ T. F. O'Brien
„ W. H. Power
„ T. Revington
„ F. Roche

The following passed their first professional examination :—

Mr. P. H. Fitzherbert
„ P. J. Gaffney
„ J. R. Jackson
„ P. J. Teggart
Mr. R. P. Byrne
„ M. Flynn
„ M. McClaney
„ V. Kennealy

Examinations in Edinburgh.

Royal (Dick) Veterinary College, Edinburgh.

The following passed their final examination and were registered as M's.R.C.V.S. :—

Mr. G. T. F. Budge
„ Hugh Gilmore
„ G. C. Inglis
„ P. T. Lindsay
Mr. R. H. Miller
„ L. A. Ramsay
„ P. T. Saunders
„ G. C. Webster

The following passed their third professional examination :—

Mr. J. Anderson
„ D. R. Crabb
„ W. Davies*
„ J. A. McMenamin
„ J. Macfarlane
Mr. J. P. Hamilton
„ F. H. Sanderson
„ W. Walker
„ J. Waddell
„ W. H. Wardrop

The following passed their second professional examination :—

Mr. A. W. Carter
„ J. N. Cooper*
„ J. L. Cormack
„ J. R. Greig
„ J. B. Idle
Mr. W. S. Lornie
„ W. J. E. Mackenzie
„ T. A. McClintock
„ W. D. Scott

The following passed their first professional examination :—

Mr. Logan Anderson
„ James Connor
Mr. Patrick McNamee
„ Dickinson Starkey

EXAMINATIONS IN GLASGOW.

The Glasgow Veterinary College.

The following passed their final examination and received the Diploma of the Royal College of Veterinary Surgeons :—

Mr. Herbert Gillmor	Mr. Wm. White

The following passed their third professional examination :—

Mr. Jas. J. O'Brien	Mr. Gordon McIntyre
,, David Taylor	

The following passed their second professional examination :—

Mr. John Scott*	Mr. John Gibson
,, Wm. Inglis	

The following passed their first professional examination :—

Mr. David Keir*	Mr. P. J. Turner
,, James M. Galloway	,, J. L. Taylor
,, A. S. Ferguson	

* Passed with Second Class Honours.

EXAMINATIONS IN LIVERPOOL.

The following gentleman passed his final examination and received the Diploma of the Royal College of Veterinary Surgeons :—

Mr. J. Holroyd

The following passed their third professional examination : —

Mr. E. Morgan	Mr. E. F. Shawcross
,, J. Railton	,, H. T. Sowerby

The following passed their first professional examination :—

Mr. W. Atkinson	Mr. C. W. Loy
,, H. D. Lewis	,, J. Startin

UNIVERSITY OF LONDON.

FACULTY OF SCIENCE. GENERAL INTERMEDIATE EXAMINATION IN VETERINARY SCIENCE (PART II.) FOR INTERNAL STUDENTS.

PASS LIST, 1908.

3301. Hughes, Hugh Tudor, Royal Veterinary College.
3302. Thompson, Leonard ,, ,, ,,

Examiners : W. D. Halliburton, T. G. Brodie.

B.SC. EXAMINATION FOR INTERNAL STUDENTS.

PASS LIST, 1908.

3301. Hughes, Hugh Tudor, Royal Veterinary College.

Examiners : Veterinary Hygiene : S. Stockman, H. A. Woodruff. Veterinary Pathology : W. Bullock, John McFadyean.

THE ROYAL SANITARY INSTITUTE.

At the examination for Inspectors of meat and other foods held in London on December 18 and 19, forty-four candidates presented themselves and twenty-nine of them were granted certificates.

The successful candidates included the following :—

Mr. Herbert A. Lake, M.R.C.V.S.
,, A. W. Reid, F.R.C.V.S.
,, A. W. Shilston, M.R.C.V.S.
Mr. C. P. Wellington, M.R.C.V.S.
,, J. S. Young, M.R.C.V.S.

Reviews.

"Veterinary Pathology." By Friedberger and Fröhner. Sixth Edition. Authorized Translation by M. H. Hayes, F.R.C.V.S. 2 vols. (London: Messrs. Hurst and Blackett. 21s. net).

In his preface to the sixth edition of the above, Professor Fröhner laments the loss of his colleague, Professor Friedberger, who was responsible for much of the matter in this work. The preface referred to is dated 1904.

The English edition has now been published, after being carefully overhauled by Mrs. Alice Hayes, who has continued to take an interest in the labour she formerly shared with her husband, the late Captain Hayes. Mrs. Hayes has considered it advisable to exactly follow the arrangement of volumes and chapters adopted by the authors, instead of dividing them into two volumes, termed respectively "Infective" and "Non-infective Diseases," as was done when the first edition of the English translation of the work was brought out.

In the production of this edition Mrs. Hayes has been assisted by Mr. Hunting, F.R.C.V.S., and by Professor R. Tanner Hewlett, M.D., F.R.C.P., who has added to the second volume some "Notes on Bacteriology."

In the scanty literature at the disposal of the veterinarian, no breach is more serious than that caused by the want of an up-to-date, and at the same time concise, work on pathology. The two volumes of Friedberger and Fröhner, with which we have had to be content for some years, have represented a useful attempt to supply such a work, but owing to the diligent investigation at present proceeding in the pathological and bacteriological world, these volumes have in many places become out of date. We are pleased, therefore, to witness the production of a new edition greatly modernized. However, even in the short space of the four years which have elapsed between the publication of the German and the English edition, discoveries have been made which already throw a different light on certain portions of the work. Among the improvements, as compared with former editions, we find a much better account of the life-history and pathological conditions set up by the *Sclerostoma armatum* and *S. tetracanthum*. These parasites have of late been attracting very considerable attention owing to the serious losses for which they are, in some districts, responsible among young equines.

The diseases of the liver and skin are considered from a more modern standpoint. Ringworm—as far as the animals affected and lesions observed are concerned—is well treated, but as in previous editions reference is not made to the varieties of trichophyton and

microsporon, and no reference is made of Neumann's researches in this subject. The paragraphs on Meischer's tubes have been re-written. In the consideration of diabetes mellitus, and leukæmia much new matter has been introduced, and a good deal of the old discarded.

The classification of infectious diseases has been improved. Strangles, quarter-ill, anthrax, tuberculosis, and glanders are well discussed, and the methods of protective inoculation in the first four of these conditions are described in detail. The fowl cholera type of bacilli and the conditions for which they are responsible receive more attention. Bovine pleuro-pnuemonia is more extensively treated, and inoculation as a means of immunization is fully considered. Dourine, which in former issues was attributed to micrococci infection, is now rightly said to be caused by the *Trypanosoma equiperdum*. Fresh matter is found on vesicular exanthema affecting equines and bovines; the various piroplasmoses are included in this edition, and reference is made to cholera, febris recurrens in monkeys, and yellow fever in dogs.

The description of three diseases of swine (swine fever, swine erysipelas, and swine pneumonia), under the not too satisfactory heading of "Erysipelatous Diseases of Swine," is, on the whole, improved; but, unfortunately, the discovery that the so-called swine fever bacillus is not the actual cause of swine fever, but that the disease is in reality caused by a filterable virus, was not made sufficiently early to allow of its being referred to in this edition, and the statement remains, "Swine fever is produced by the so-called swine fever bacillus."

A very good description of "Roaring" finds its place in the second volume, and in connection with this condition interesting reference is made to the German civil law.

We consider this edition of Friedberger and Fröhner will be a useful addition to the bookshelf or the practitioner, and a good stand-by for the student of veterinary pathology and medicine.

"Register of Veterinary Surgeons," 1909. Issued on January 1, 1909. Previous edition sold out in the autumn of 1908. (Adlard and Son, Bartholomew Close, E.C. 3s. 6d.)

It is quite a change to see the Register out so early, and we are pleased to note the following improvements:—

In addition to the inclusion of alterations to Bye-laws and change of address of members, the chronological lists have been re-set on a uniform principle, and the lists distinguish deceased persons, persons who have passed through offices and those still in office. The Fellowship list has also been re-set, and is now easier to read. The Foreign and Colonial alphabetical lists have been revised and re-arranged, *e.g.*, it is possible now to find the names of members practising in any of the South African colonies. Australia, Canada, and America have been similarly sub-divided. Existing practitioners reduced from 319 to 280. Introduction of regulations for admission to the Indian Civil Veterinary Department, the Inspectorate of the Board of Agriculture and Fisheries.

Names of graduates qualified at December examinations will be inserted in the Register on a separate slip.

LITERARY NOTE.

MESSRS. BAILLIERE, TINDALL AND COX inform us that they have been authorized, on behalf of the Department of Education of the Sudan Government, to undertake in future the issue of the reports of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. Up to the present two volumes have been issued, covering a period from the foundation of these laboratories in 1903 to 1906. The third report will be issued at the beginning of the year, bringing the work up to 1908.

The Sudan Department of Education has taken this step to meet the considerable demand for these reports which has arisen amongst medical men and other scientific workers interested in tropical research. Hitherto only a limited number of copies has been issued, and these reports have been sent gratuitously to Government Departments, and to various medical, sanitary, and other institutions interested, as well as to a few leading authorities on the subjects dealt with.

The work of these laboratories has so far extended that the forthcoming third report will contain some 475 pages of detailed records of many interesting experiments and researches, principally connected with tropical medicine. The book will be profusely illustrated, and include many valuable coloured plates.

Simultaneously with the third report, and as a supplement to it, will be issued a review of the progress made in tropical medicine during recent years compiled by Dr. Andrew Balfour, the Director of the Laboratories, and Dr. R. C. Archibald.

The great cost of production of these reports, especially in their present voluminous dimensions, necessitates making a charge for them henceforth. The price fixed will be as moderate as is consistent with the cost of publication, and any profit made on them will be devoted by the Sudan Department of Education to a special fund to be devoted to future publications of the laboratories.

All applications for current publications and for reprints of the first and second reports of the Wellcome Research Laboratories, Khartoum, should be addressed to Messrs. Baillière, Tindall and Cox, London.

TICKS ON DOGS.

VALUABLE dogs are often killed owing to the attacks of scrub (not cattle) ticks. If the ticks are promptly removed a dog will usually recover, but if they are not detected the animal rarely survives. In the case of woolly-haired dogs the insects are difficult to find, in which case the dog may be sheared and the ticks removed. They should not be forcibly pulled off, as the mandibles are invariably left in the animal's skin, and the mischief goes on. Insects breathe through their bodies, hence, if the pores are closed by the application of oil, turpentine, or kerosene, the tick dies, and may be extracted entirely. If the ticks cannot be found, the following dressing will be of some service: Soft soap, 4 oz.; Kerosene, 1 teacupful; water, 1 quart. Boil the soap and water together until the soap is dissolved. When cool, add the kerosene, and agitate the mixture thoroughly for five minutes with a rod. Wash the dog all over with some of this mixture. Give internally 3 to 10 gr. of iodide of potassium in 2 tablespoonfuls of water.—*Queensland Agricultural Journal.*

Personal.

Mr. H. Tudor Hughes, M.R.C.V.S., has passed the final B.Sc. examination in the University of London. He is the first candidate to obtain this degree in Veterinary Science.

Professor G. H. Wooldridge, Royal Veterinary College, London, has been appointed a member of the Board of Studies of the University of London for Veterinary Science (Veterinary Hygiene).

We regret to announce the death of Professor Rindfleisch, the well-known German pathologist, who, succeeding his master, Virchow, in the appointment, occupied the chair of pathology at Würzburg for over thirty years.

It is with extreme regret we announce the death of Mr. J. H. Peard, jun., the eldest son of Mr. J. H. H. Peard, M.R.C.V.S., which occurred in Cork on Wednesday, following an operation for appendicitis. He had acted as Secretary and Clerk of the Course to the Phœnix Park Club since July last, and discharged the duties connected with these *rôles* in most efficient manner. Mr. Peard, jun., was also reading for the veterinary profession, and was to have gone up for his final examination this month (December). He had only attained to his twenty-second year, and much sympathy will be felt for his parents in their bereavement.—*Irish Times.*

Translations.

FRACTURES OF THE PELVIC FLOOR.

BY M. L. MAGNIN, VETERINARY SURGEON TO THE 5TH ENGINEERS AT VERSAILLES.

Professor Nocard published in *Le Bulletin de la Société centrale*, 1876, p. 1327, a complete study of fractures of the pelvic floor, which he considered incurable, practically speaking. "Experience proves," said he, "that these fractures unite promptly, but the subjects remain incapable of performing services. What is the reason? It is because in the neighbourhood of this fracture along the anterior edge, as well as at the posterior border of the foramen ovale, considerable nerve trunks pass which carry sensibility and movement, that is to say, life, to the voluminous muscles of the internal and posterior region of the thigh; these nerves are always implicated in the calluses which repair fractures of the pelvic floor. Paralysis, then atrophy, followed by fatty degeneration of the adductor and flexor muscles of the limb, and forced uselessness occur. As a result there is a particular and very curious lameness, quite characteristic, which enables us to recognize at once the existence of a fracture."

Facts at times upset the wisest and most impeccable scientific conclusions. All fractures of the pelvis are not curable, some are even fatal, but a number are capable of *sufficient* cure. Here is one record of fact, and it is not the only one I could quote.

At the end of 1889, the mare Psyche, aged 5, of the 7th Cuirassiers,

then in garrison at St. Menehould, fell on the ice in going to the watering place, and fractured the right floor of the pelvis.

The lameness showed that classic form perfectly described by Nocard, since well known, and which makes one suddenly think, even in the absence of all information, of a fracture of the pelvic floor. Besides, rectal exploration practised some days afterwards showed the existence of a voluminous callus, extending from the anterior border of the pubis to the rear of the foramen ovale and occupying the greater part of the right pelvic floor. The foramen was nearly filled by the callus. The left half of the floor was intact. The infirmary containing no slinging apparatus, Psyche was left at liberty in a loose box, and at first she was obliged to be helped up; this will show the unfavourable conditions under which the case was treated.

After some days the characteristic muscular atrophy arose of (*a*) the adductor muscles of the leg and thigh, due to compression of the obturator nerve; (*b*) of the ischio-tibials *in their lower part only*, due to compression of the posterior crural nerves at the level of the small sciatic notch. *The upper part of the ischio-tibials innerved by the inferior ischio-muscular remained normal.*

Evidently the deep pelvi-crural nerves were very probably affected also, but it was not possible to judge of the state of the twin muscles of the pelvis and crural floor. Rectal exploration showed that the obturator internus was affected slightly, probably by the callus.

Less than two months after the accident Psyche was discharged and sold in the public auction at Saint-Menehould; a friend, M. Léon Bister, bought her for 105 francs. Less than four months after the accident she was ridden and driven by the owner. She has rendered good service for some years, and there is only atrophy of two groups of muscles. To my great surprise she even foaled two years after without any difficulty.

The principal inconvenience was that the toe of the right foot was dragged slightly, and the shoe soon worn through, and the left hind fetlock had to be protected with a boot. The limb was exempt from lameness, but not quite as sure and regular in movement as a perfectly sound member.

(*Revue Générale de Médecine Vétérinaire.*)

EXAMINATION OF THE EYES IN MILITARY HORSES.

BY F. LAMERIS, VETERINARY CAPTAIN, "TIJDSCHRIFT VOOR VEEARTSNIJKUNDE," MAY, 1908.

THE German Army veterinary surgeons, Rosenfeld, Vogler, and Qualitz had occasion to examine the eyes of the cavalry horses in the garrison of Zutfen in order to see whether eye affections in the Irish horses of the Dutch Army were as frequent as in those of East Prussia of the German Army. Mydriatics were only made use of if it was desired to make a close examination of the internal parts of the eye. Those used were atropine sulphate, homatropin hydrobromate, and the so-called hydrin in Bayers combination (Re-ephedrin hydrochlorate 1, homatropin hydrochlorate 0·01, aq. destill. 10). Of these preference was given to homatropin. In the case of hydrin there was a profuse secretion of tears and repeated instillations were necessary,

and with atropine there was paralysis of the ciliary and sphincter muscles, as well as dilation of the pupil, and paralysis of accomodation was present fourteen days to three weeks, and made the horse incompetent, and a hindrance to movement.

Two hundred and thirty-five troop horses were examined with Liebreich's eye speculum and Priestley-Smith's lamp. In twenty-nine horses a myopia of more than 1D was established; 74 per cent. of the 235 horses were free from acute and chronic changes in both eyes. Scars of the eyelids were not reckoned. Chronic dacryocystitis was noticed in one horse in both eyes, scars, specks and cloudiness of the cornea in ten eyes, a vertical wrinkle running over the middle of the cornea, and through the sight, which appeared to be a local thickening of the cornea due to defective formation in two horses, cysts at the upper corner of the eyeball in three eyes, a colouring of the iris by yellow fibrinous streaks once, and a hinder synechia twice. The most frequent affection in or about sixty-two eyes, or 13 per cent., was opacity of the lens. Irremovable opacities of the lens occurred in four eyes, fluidity of the lens in sixteen eyes, and synchisis scintillans, in consequence of the presence of cholesterin crystals, in three eyes. In two horses there was atrophy of the bulb of the eye, due to previous wounds.

In an old horse, aged 16, in the nasal half of the left eye there was a bladder-shaped swelling, taking up about a fourth part of the pupil. It was thought to be an excessive growth of the cells of the lamina cribrosa.

The high percentage of changes in the internal parts of the eye were not due to moon-blindness, as Vogler claims in the Prussian Army, but to the occurrence of contagious pneumonia.

Whether the eye defect was associated with the temperament of the horse was questionable. The affected horses seemed of nervous disposition, and the defects may have been partly due to this.

(*Deutsche Tierärztliche Wochenschrift.*)

PULMONARY EMBOLUS—SUDDEN DEATH.

BY M. TH. MOUOD, ARMY VETERINARY SURGEON.

An old horse, aged 6, of the depôt of Constantine, intended as a remount for infantry officers, never having been ill previously, died suddenly on the afternoon of March 8, 1908.

Nothing abnormal had been noticed about him. In the morning when loose in the park he had frisked about as usual; he ate and drank all right. The attention of the stable guard was called to the animal by him suddenly falling on the floor of the stable. Running to him immediately, he found him dead, without having made a movement, his neck bent, and limbs drawn up under the body. The flesh was in a good state. The ocular mucosa livid; that of the mouth of a slightly cyanotic tint. I immediately surmised rupture of an aneurism, and was very surprised not to find any fluid either in the abdominal or thoracic cavity. The left lung was normal, but the right very dense, œdematous, and impermeable. No congestion, hæmorrhages, or inflammation. The pulmonary acini were simply filled with bloody

serosity. Some incisions made in the lung tissue showed an embolus of the pulmonary artery at the level of one of its first ramifications. The embolus was about the size of one's little finger, the artery has only one bifurcation in the horse measuring 3 to 4 cc. in its single part, and 1 to 2 cc. in its forked part. The embolus had the structure of the prolonged clot of Virchow, dense, resistant, dry, brittle, and very rich in fibrin, yellowish exterior. On section, blackish in the centre, a little more coloured at the periphery.

It was free in the middle of a voluminous red clot which occupied the principle branch of the pulmonary artery and the cavities of the right heart. No alteration of the vascular walls and no adhesions, it was free and unconnected with the artery, and completely obstructed its lumen.

The presence of this embolus threw light on the nature of the lesions, and easily explained the sudden death. Arising from one of the large veins it had passed the right heart and become arrested in one of the principal branches of the pulmonary artery at a point where the general direction of the artery and the strongest driving force had conducted it. There it had broken, and stopped a great part of the blood thrown by the systole of the right ventricle, causing a certain quantity of it to be directed against the wall of the vessel. This blood had lost its propulsion speed, and progressively invaded the right lung, filling the acini with serosity, rendering the lung less and less permeable, and causing œdema.

In the heart there was hyposystole, then complete asystole causing sudden death.

A superficial dissection did not discover the origin of this embolus, but its texture and absence of all lesion of the wall of the pulmonary artery showed that it probably arose from a thrombus of one of the large veins.—G. M.

(*Revue Générale de Médecine Vétérinaire.*)

CHLORAL HYDRATE IN GENERAL ANÆSTHESIA.

BY DR. BERNARDINI, MILAN.

After numerous researches and experiments Dr. Bernardini has come to the following conclusions:—

(1) Solutions of chloral, even in a high degree of concentration, have neither hæmolytic nor coagulating effect on the blood.

(2) The addition of chloride of sodium to the solutions of chloral, in order to diminish its coagulating properties, which have been proved in the blood *in vitro*, gave negative results.

(3) The best method of preparation and preservation of isotonic solution of chloral is by keeping it in special glass balls.

(4) Subcutaneous and tracheal injections have been abandoned. The former produced no useful effect, and the latter caused pulmonary lesions to take place.

(5) The action of chloral introduced into the veins or abdominal cavity is constant and complete. Anæsthesia, analgesia, muscular resolution, are complete; sensibility is abolished.

(6) Choral narcosis obtained by introducing the isotonic solution of chloral hydrate into the venis is absolutely without danger, and always gives the best results.—G. M.

(*La Clinica Vétérinarie.*)

WHAT HAPPENS TO GLANDERS VIRUS IN THE DIGESTIVE TUBE.[1]

BY E. RAVENNA.

Of seven cats fed on food to which glanders virus had been added, one only contracted the malady. The other animals remained healthy, and, when killed some time after, none showed any sign of infection. The cat that took glanders by ingestion died in ten days. At the autopsy caseous lesions were found in a group of glands in the region of the cæcum, and also in the spleen and inferior border of the left lung, but no alteration of the intestine.

This experience shows that intestinal mucosa would appear to be a bad medium for glanders bacilli. *In vitro* Ravenna has not been able to show what element among the digestive juices restrains the development of glanders; emulsions of bile, liver, pancreas, intestinal or stomachal mucosa, did not modify the virulence of the bacilli. *In vivo* the results were different; three, four, or seven hours after ingestion of glanders matter it is not possible to put in evidence, by inoculation, the presence of glanders bacilli in the intestinal contents.

(*Revue Générale de Médecine Vétérinaire.*)

SYNGAMOSIS OF DOMESTIC BIRDS.

The syngami are strongyles of two kinds met with in domestic birds: the *Syngamus trachealis*, found in Gallinaceæ; the *Syngamus bronchialis*, in Palmipeds.

The *S. trachealis*, which pheasant breeders know under the name of "red worm" and "forked worm," lives in the trachea and large bronchi of the majority of domestic gallinaceæ; pheasant, fowl, turkey, peacock. The affection was first made known in 1799 by Wiesenthal in the United States. The birds attacked may be recognized by a kind of wheezing abrupt cough accompanied by sneezing. The sick birds gape, have their beaks filled with frothy saliva, are voraciously hungry at the end of the illness, then lose appetite and die cachectic or asphyxiated.

The mucus carried to the beak by the coughing fits and the excreta contain the eggs of the parasite, which can be discovered by microscopic examination. One can also pluck the feathers from the neck of the sick bird, pinch up the trachea in a fold of skin, and see the worms through the transparency.

On autopsy one finds syngami in the trachea adherent more or less to the mucosa; at their point of implantation a little tumour filled with pus forms which is large enough to obstruct the trachea and provoke asphyxia.

The propagation of syngamosis is attributed to wild birds; the eggs lain in damp soil evolve, then hatch, and embryos are given forth which are taken up by healthy birds and infect them.

[1] Communication to the Third Congress of the Italian Society of Pathology.

As a prophylaxis, it is necessary to isolate the sick birds, sprinkle, and disinfect the soil of the poultry house and runs with 1 in 1,000 sulphuric acid solution, or marine salt, and give suitable food free from all contagion. As curative treatment, garlic, assafœtida, tobacco-fumes, alcoholic solution of salicylic acid (8 to 10 in 100), salicylate of soda (1 in 100) are recommended.

The syngami of palmipeds form lumps in the trachea, larynx, and bronchi, and cause death by asphyxia. They may be found in the goose and duck. They evolve as the *S. trachealis*.—G. M.

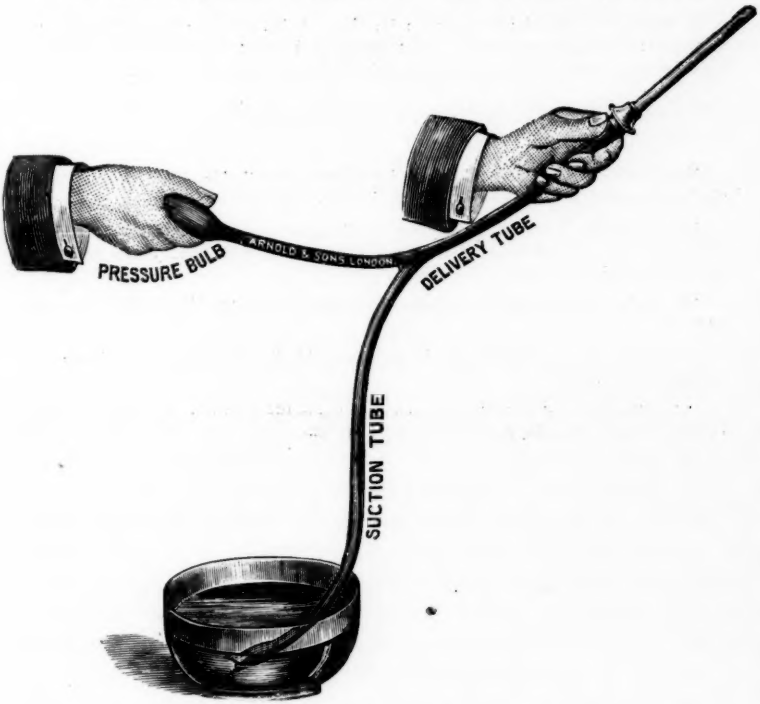
(*Ex Le Bulletin Vétérinaire.*)

New Instruments.

"THE ADAPTABLE" STERILIZABLE MILK FEVER SYRINGE (Patented).

Arnold and Sons, West Smithfield.

In bringing the "Adaptable" Patent Milk Fever Syringe before the profession, we wish to point out that it is an entirely new instru-



ment, with facilities and advantages that must be apparent to everyone. It is made a different shape to those already on the market, it having a separate tube, with bulb attached, for bringing about a

continuous action of suction and injection. It is constructed so that when using it is much more convenient than the ordinary syringe, the bulb of the ordinary syringe being in the centre of the tube, whereas the pressure bulb of the new "Adaptable" being at the end of the pressure tube and apart from the suction tube, *it leaves room to use the hands more fully*, and at the same time the bowl for the suction tube can be placed in a safer position than otherwise.

Books and Periodicals, &c., Received.

Journal of the Royal Society of Medicine; Journal of the Royal Army Medical Corps; Agricultural Journal of the Cape of Good Hope; Transvaal Agricultural Journal; University of London Gazette; L'Hygiène de la viande et du lait; Bulletin of the Sleeping Sickness Bureau.

Letters and Communications, &c.

G. Sutton; F. Bullock; G. Mayall; H. Gray; J. W. Pollock; J. Stewart Wood; T. Powell; C. Roberts; Spratts, Ltd.; Arnold and Sons; Board of Agriculture and Fisheries, Department of Agriculture and Technical Instruction for Ireland.

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